THE POLAR TIMES

Captain Michael Healy, USRCS 'Hell-Roaring Mike'

Secretary's Letter

Creating this issue was very gratifying. We have a new president, the first elected by the members, Dr. Richard L. Chappell. The Board of Governors elected 18 honorary members who have distinguished themselves in the field, one for each year since 1980; there were many more who are highly qualified, but the intention is to elect at least one each year in the future so some will be picked up.

Again thanks to all who have contributed to this issue. We have many more articles than we can print. Some of the articles had multiple contributors. We usually give credit to the first to submit or we note 'multiple contributors'. We haven't overlooked you, but if someone else's name appears on an article that you have submitted then it means that his has arrived first. Keep them coming; eventually you will see your name in print.

We encourage all of you to write for publication. However, many tomes have been delivered to my doorstep. I do not have the time to read them much less cut them down to 500 hundred words which we use as a rule of thumb for accepting submissions. As I said in the last issue 'succinctness and pithiness are keys to getting your theme into print.'

We are in the initial stages of planning a national convention. See "Announcements," page 23, for details.

Sincerely

Brian Shoemaker

Editor's Letter

Dear Readers,

Every issue is another exciting adventure for me! Having been steeped in the ongoing discoveries, perils and triumphs at both poles for the last six years and having had the privilege of working with a walking archive of polar lore, Capt. Brian Shoemaker, all I can say is, "Thanks!" A special congratulations to all the wonderful achievers elected by the Board of Governors as Honorary Members. Each of you has made a difference in this world.

Della Weston

The Polar Times

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The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $10 a year ($12, foreign), and entitle members to receive *The Polar Times* twice a year.

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About Your Annual Dues

Some clarification is needed about annual dues contributions.

For ease of administration we ask for annual dues to be submitted at the end of each calendar year, and we include a remittance envelope for those whose dues have expired. So if you receive a remittance envelope, fill out the form and include your dues.

Since many of you send in your dues several years in advance, we tag your contributions to our membership files in our computer. This tag prints out on your membership sticker that we place on the envelope for *The Polar Times*. If it reads "expires 1298," then your membership contribution is due in 1999. If it reads "expires 1297," you are in arrears! If in doubt, send in your contributions, and we will credit your account by advancing your expiration date.

Multiple year contributions are welcome as are donations. We are a tax exempt organization as defined by Sec 501(C)3 of the IRS Code. ❑

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The Polar Times

American Polar Society • Fall-Winter 1997

Cover Story

"Hell Roaring Mike" Healy to Sail the Polar Seas Again

by Brian Shoemaker

On November 15, 1997 the Icebreaking Research Ship *USCGC Healy* slid down the ways at Avondale Shipyard in New Orleans, Louisiana in commemoration of "Hell Roaring Mike" Healy's career as Captain of the *Revenue Cutter Bear* and other ships over 100 years ago.

The ceremony was marred, however, when the ship went into the water, creating a backsplash of muddy debris that inundated the viewing stands and injured about 20 people. Planned post-launch speeches were cancelled.

Captain Michael A. Healy was born near Macon, Georgia in 1839, the fifth of 10 children born to Michael Morris Healy, an Irish plantation owner, and his wife Mary Elisa, an octoroon slave. Though his siblings all became distinguished in life as bishops, priests, nuns, lawyers and university presidents, the man who was to become "Hell Roaring Mike" forwent advanced schooling and went to sea at age 15 on the East Indian clipper ship, *Jumna*. The *Jumna* was owned by Nathaniel Palmer whose own career had taken him to Antarctica some 35 years before; perhaps the spell that lured both men to the poles was handed down at that time.

In 1864 he applied for a commission in the U.S. Revenue Marine and was accepted as a Third Lieutenant. Healy began his lengthy service career in Alaskan waters in 1875 as Second Officer on the *RC Rush*. He was given command of the *RC Chandler* in 1877, promoted to Captain in 1883 and commanded the *RC Corwin* in 1884. Finally in 1886, he became commanding officer of the *RC Bear,* taking her *to* Alaskan waters for the first time. Here he remained until 1895.

It was as Commanding Officer of the *Bear* that Healy truly made his mark in history. During the last two decades of the 19th century, Captain Healy was the United States government in most of Alaska. In his twenty years of service between San Francisco and Point Barrow, he acted as judge, doctor and policeman to Alaskan natives, merchant seamen and whaling crews. He operated in an eerie echo of what would become the mission of his Coast Guard successors a century later: protecting the natural resources of the region, suppressing illegal trade, resupply of remote outposts, enforcement of the law, and search and rescue.

Even in the early days of Arctic operations, science was an important part of the mission. Renowned naturalist John Muir made a number of voyages with Healy during the 1880s as part of an ambitious scientific program. With the reduction in the seal and whale populations, he introduced reindeer from Siberia to Alaska to provide food, clothing and other necessities for native peoples. The primary instrument in Healy's capable hands, to accomplish all of this, was the *Revenue Cutter Bear*, probably the most famous ship in the history of the Coast Guard. Under "Hell Roaring Mike," the *Bear* became legendary as "Healy's Fire Canoe." Healy and *Bear* proved to be a perfect match, a marriage of vessel capability and unrivaled ice seamanship that became legend.

The *USCGC Healy* (WAGB 20) will "carry on the legacy of her namesake" according to the United States Coast Guard. The new *Healy* displaces 16,000 tons, is 420 feet in length with an 82-foot beam (half the length of the *Bear*), and can break 4.5 feet of ice continuous steam, has a modern suite of radios, satellite navigation, modern weather forecasting with satellite downlinks and so forth, with a crew of 75 and room for 52 scientists.

One wonders how Mike would have reacted if assigned to command such a vessel—all of the above conveniences are a link to shore, to Coast Guard headquarters, to Washington, to the world—a tether that would limit the decision-making power of the man who, in effect, was the government to most of rural Alaska, who was entrusted to make decisions on behalf of the President of the United States, who had to mete out justice as judge and who on a daily basis had to make decisions which affected the lives of thousands of Alaskans. Certainly having *the USCGC Healy* as a namesake is a distinct honor, but the ghost of "Hell Roaring Mike" tells me that, given the choice, he would rather command the *Bear*. ❑

Note: The RC Bear *was retired by the U.S. Coast Guard and purchased by Admiral Richard E. Byrd who took it to the Antarctic. One can imagine "Hell Roaring Mike" nodding in approval over Byrd's shoulder as he edged her into the ice once again. There are six good books written about "Hell Roaring Mike" and the* Bear. *We have listed them in Vol. 2, No. 4, page 22 of* The Polar Times.—Ed.

Guard's Polar Duty to Lift Economy

Paraphrased from the Albany *NY Times Union*, 12 March 1996, SCOTIA, NY—While NSF touts savings by using air National Guard for Antarctic operations, Scotia, New York, boasts of an economic windfall for the local economy. By 2000, $75.6 million a year will be pumped into the region.

The selection of the Stratton Air National Guard to supply the National Science Foundation's polar missions will provide a significant lift to the area's economy, key architects of the selection said Monday.

Under the consolidated operation, the 109th's payroll will grow from $19.6 million to $32.3 million by the 1998 fiscal year. Full-time Guard staff will increase from its current 263 to 502, officials announced at a news conference in the Scotia facility.

Expenditure for services and equipment will jump from the current $6.8 million to $14 million by the fiscal year 2000, according to the Guard.

Although the federal contracts will go to the low bidders, local firms have won the vast majority of recent work at the site.

Figuring "indirect" job creation and other so-called "multiplier" projections of the military, Stratton's joint polar mission will funnel $75.6 million annually to the region within four years, said Col. Graham Pritchard, the Wing's air commander.

The 109th Air Wing's transport planes are the only Air Force C-130s equipped with skis for polar landings. Those planes are among the few heavy-lift transports in the world capable of serving remote polar locations. The unit has been flying men and material to Greenland since 1975 and to Antarctica, along with the Navy, since 1988.

Dr. Neil Sullivan, head of the polar program for the National Science Foundation, said consolidating air support through a phase-out of naval participation would halve air transport costs. He praised the 109th Air Wing with its citizen-soldier contingent, for flying to the poles accident free for 20 years. ❑

Arctic Mine Blast Kills 23 Workers

Associated Press, 1 Sept 1997, LONGYEARBYEN, Norway (cb Nathan Frank)—An apparent explosion of methane gas deep in a Russian-operated coal mine on Norway's remote Svalbard Islands killed 23 Russian and Ukrainian workers. The blast occurred near the small Russian settlement of Barentsburg, a Russian treaty settlement of about 850 people 30 miles west of Longyearbyen, capital of the Svalbard archipelago and 400 miles north of the Norwegian mainland.

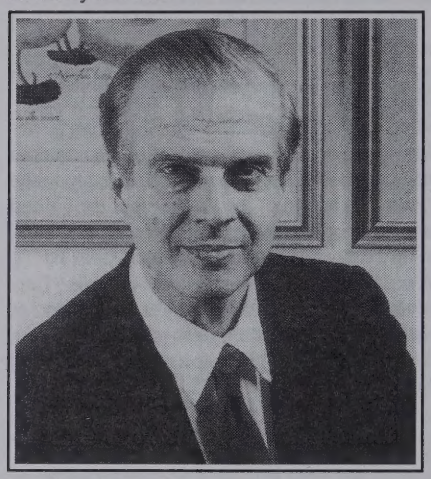
A year ago, a plane carrying miners and their families from the same community crashed into a mountain near there on a flight from Russia, killing all 141 people aboard. ❑

Former Eagle Scout Elected President of the American Polar Society

by Della Weston

Dr. Richard Chappell was elected President of the American Polar Society by a general mail-in election in September/October. He will serve for three yeas until the turn of the century.

Dick Chappell began his polar career as a 17-year-old Eagle Scout during the International Geophysical Year, having been selected in a national elimination contest. He spent over a year there, "wintering over" in 1957 at Little America V on the Ross ice Shelf. Upon his return, inspired by his experience, he received his BSE (Princeton, 1962) and Ph.D. (Johns Hopkins, 1970). Entering the Navy for four years, he served on Admiral Hyman Rickover's staff. He currently serves as Executive Officer, Ph.D. Program in Biology, City University of New York Graduate School, and Professor, Department of Biological Sciences, Hunter College, where his laboratory is located.



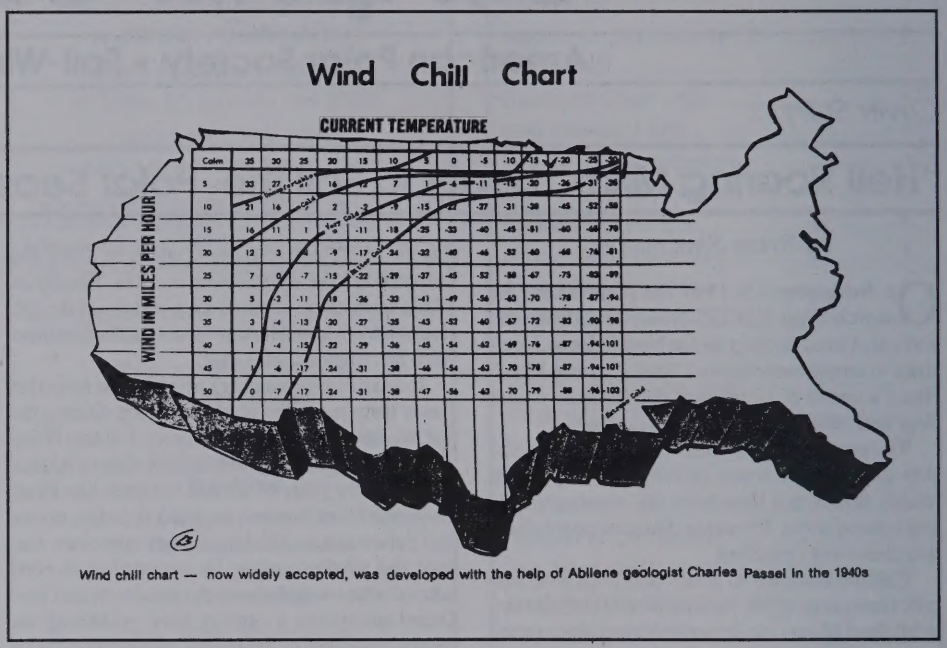
Dr. Richard Chappell

Dr. Chappell spends his summers in Woods Hole Marine Biological Laboratory conducting vision research funded by the National Institute of Health. He has served as Vice President of the American Polar Society since 1978 and has also served on the Explorer's Club Board of Directors. Memberships include the New York Academy of Sciences, AAAS, ARVO, IBRO and the Society for Neuroscience.

He chairs science development programs for inner city youth science enrichment and for his wife's Chappell Gallery in Boston. Dr. Chappell has been involved with selection of Scouts for Antarctica for many years and has chaired four NSF/BSA national selection panels.

His publications include one book (*Antarctic Scout*, 1959), 32 papers, and one patent. ❑

Abilene Geologist Helped Chart Chill



Wind chill chart — now widely accepted, was developed with the help of Abilene geologist Charles Passel in the 1940s

***Abilene Reporter-News*, 24 Nov 1985, by Lash Lashbrook**—Almost five decades ago, a young geologist was offered a once-in-a-lifetime opportunity—to travel to the bottom of the Earth as a member of Admiral Richard Byrd's Antarctic Expedition.

Today, a product of that adventure—the "Wind Chill Chart"—is used worldwide.

The chart was devised after many experiments conducted near the South Pole by the late Dr. Paul Siple and Abilene geologist Charles Passel.

With the approach of the winter months, meteorologists, businessmen and women, outdoorsmen, homemakers and many others get out their charts to see just how the lowering temperatures and bone-chilling winds will affect them, their clients and their families.

Passel and 33 members of the West Base party sailed from the Boston Navy Yard in November 1939. Two months later, they arrived in the Antarctic near Roosevelt Island. For the next few months, they were busy setting up the West Base before the 24-hour night settled in, beginning in April 1940.

As the long night approached, "...we could only work outside five or six hours. And we couldn't work outside at all when the temperature dropped to more than 50 degrees below zero because of the possibility of frosting our lungs," Passel wrote in the journal he kept meticulously throughout the expedition.

The series of experiments, called "runs," which led to the formulation of the "Wind-Chill Index," began May 1, 1940, and continued into the following January, Passel said.

The basic computation involved subfreezing temperatures in minus-degrees Centigrade, multiplied by the wind velocity in meters per second. However, the external and human body variable factors influencing the measurement of relative comfort sensation were considerably more complex.

The difference in the tests, conducted by Passel, Siple and Malcolm Douglass, were resolved and the "Wind-Chill Index" chart was devised.

"In spite of its obvious faults, this scale was, because of its simplicity, popular among members of the United States Antarctic Service," Siple and Passel later wrote.

During World War II, its use spread to Alaska and into manuals used by members of the armed forces operating in other cold regions of the world.

Today, its acceptance as a measurement of body comfort, or discomfort, is virtually worldwide.

Passel points out that the chart applies only to exposed human skin, not to protected skin or to any other creature. ❑

With a Big Splash, a New Ship Honors an Arctic Explorer

***Ice Cap News*, Apr-June 1997, p. 71 (cb Art Dumont)**—A sideways launch, traditional at the Moss Point, Mississippi, shipyard where she was built, sends the U.S. Navy's newest oceanographic survey ship, the *Henson*, into service.

The vessel, fourth in a series of ships designed to gather data in both coastal and deep waters, is named for Matthew A. Henson, a pioneering black arctic explorer. Henson accompanied Robert E. Peary on all the adventurous naval officer's voyages of discovery including the 1909 thrust to the North Pole. Historians often overlooked Henson, who was a superb navigator, adept dogsled driver, and master of survival in the far north.

Ten years ago, Harvard Professor S. Allen Counter located Henson's Greenland descendants and brought them to the U.S. to meet other family members, including a grandniece, Audrey Mebane, who represented the family at the ship's launch. Through Dr. Counter's efforts, Henson's body was moved from a New York grave to Arlington National Cemetery (Geographic, September 1988). ❑

50th Anniversary of NARL Celebrated by Barrow Iñupiat Community

by Brian Shoemaker

BARROW, Alaska-With a wide and slightly sheepish grin, John Schindler danced to the Eskimo drummers as Piuraagvik Community Center throbbed with the percussive beat of nostalgia and communion.

Schindler, a former director of the Naval Arctic Research Laboratory responded August 8th when the native crowd invited him to join in the dancing celebrating the 50th anniversary of the founding of the research center.

The 50th Anniversary of the Naval Arctic Research Laboratory, celebrated August 4-9 in Barrow, Alaska, was an event organized to acknowledge the role that the U.S. Navy played in the training and development of the north slope natives to meet the demands of a modern world and in turn acknowledge the contributions that the Iñupiat people have made to scientific research in the Arctic. It was organized by the Barrow Arctic Science Consortium whose President, Richard Glenn, directed the conference and associated scientific and social agendas.

Attendees included Eskimos, scientists and military personnel who had worked at NARL as far back as 1944 when the Navy began the development of Petroleum Reserve Four. Kenneth Toovak, who with Dr. Max Brewer was one of the conference cochairmen, laid down the tenor of the celebration. "Thank God for the Navy," he began "The Navy came here in 1944 and put us to work and trained us to meet the demands of a modern world. They taught us how to drive tractors, trained us as electricians and oilfield workers. Many of our leaders got their start at NARL." He noted that the continual flow of scientists gave the entire community of Barrow an appreciation of the need for science and how it was conducted in both the field and the laboratory. Nostalgically he reminisced how scientists and Eskimos on ice stations and in the field worked as a team under some of the most demanding weather conditions on earth just to conduct a little research.

Over the next several days scientists speaking at the conference acknowledged that the Eskimo were key to conducting research in the field. Many spoke of their lives being saved by the natives from storms, breaking ice and from the ever-present polar bear. "No one went out to the field camps with out an Eskimo guide and assistant—no one would have dared," said one scientist. Dr. Vera Alexander stated that, "Eskimos frequently provided scientific insight" in the field redirecting the research process. Often complex experiments in the field verified Eskimo lore that had evolved over thousands of years. Dr. Robert Rauch noted that many scientists "trusted the native skills as keen observers of the natural world." Others noted that this union of scientist and Eskimo over 50 years had developed Barrow as a model city for the support of scientific research (see article on NSF Director, p. 11).

Toovak, who joined the crowd at Piuraagvik Friday night and spent the preceding days cohosting the NARL celebration, said he also believed the event had been well received.

"It has been tremendous for all of us. It makes me feel like my family has gotten together again," Toovak said. "Lots of old-timer people really appreciated how we planned this thing."

Among the "old timers" was Max Britton, a former official of the Office of Naval Research. In 1947, the ONR established the Arctic Research Laboratory, later renamed the Naval Arctic Research Laboratory, at Barrow, already the site of a camp for sailors and scientists exploring the Naval Petroleum Reserve No. 4.

Britton, too, lauded the anniversary's success. "I think one of the nicest things about the meeting was that it reinforced my respect and admiration for the local people," Britton said. "To see all of my Native friends has been a wonderful reunion."

Britton was reunited also with his namesake—Max Ahgeak—now president of the Ukpeagvik Iñupiat corp., the village corporation to which ownership of the NARL facility was transferred in 1984. The complex now houses Ilisagvik College, the Barrow Arctic Science Consortium, offices of the North Slope Borough, and labs and office space for visiting researchers. Britton and others said they are pleased the facility still fosters learning and research.

"I am very happy to see the very good use they are making of something I had a hand in building, both physically and philosophically," he said.

Schindler expressed a similar sentiment. "I think the best part of all this week has been to see this place still being used for science," he said. "We put a lot of hours into this place and a lot of effort."

Brian Shoemaker, former Commander of NARL, added his support for the transformation by UIC, Ilisagvik and the Borough. "After watching this conference and sitting here, I realized this place is being run better than it was when it was run by the Navy, or the tanik," he said, smiling. "Thank God for the Iñupiat people."

Benjamin Nageak, mayor of the North Slope Borough and former employee of NARL, also said he believed the conference could be a catalyst for more Barrow-based arctic research.

"I'm really excited about the prospect of continuing relationships with the science community and about the possibilities of continued research," Nageak said. ❑

(Sources: *The Arctic Sounder*, 14 Aug 1997; native interviews; and interviews with other conference participants.)

Epidemiology: Penguins Contract Chicken Virus

***Washington Post*, 19 May 97, by Curt Suplee**—A runaway alien chicken virus is infecting the penguins of Antarctica, thanks to slovenly habits of human visitors. The discovery "raises concern for the conservation of avian wildlife" there, Australian researchers report in the May 15 *Nature*.

The frigid continent's emperor and Adelie penguins usually don't get infections. But about 20 months ago, blood samples taken from 185 chicks and adults showed that the animals had been exposed to infectious bursal disease virus—a scourge of the world's domestic poultry industry, but an improbably pathogen in Antarctica.

Tests revealed that about 65 percent of emperor penguin chicks within a few dozen miles of Australia's year-round Mawson research station were infected with the immune-system-ravaging virus, probably because of "careless or inappropriate disposal of poultry products" that allowed scavenger birds to pick up the disease. "Movement of people carrying the virus on contaminated footwear, clothing, equipment or vehicles" may have helped.

The Mawson-area birds are not yet sick, the Australians report. Meanwhile, "the potential for expeditioners and tourists to be vectors [carriers] of disease as they move around Antarctica may pose the greatest threat yet to its avian fauna." ❑

Canadian Helicopter Rescues School Group From Ice Floe

***Baltimore Sun*, 6 June 1997, p. 27A, VANCOUVER, British Columbia (cb Peter Barretta)**—A group of teenage students and their teachers was rescued by a Canadian military helicopter yesterday after being stranded on an ice floe in the Arctic for four days. Everyone was reported to be fine.

The 15 people were adrift off the north end of Baffin Island near Canada's border with Greenland. They became stranded Monday during an expedition to learn traditional Eskimo ways. (See companion article on page 11.) ❑

Antarctica's Ice-Free Mountains Hold Clues to the Past

***Pensacola News Journal*, 23 March 1997, p. 19A, SHACKLETON GLACIER, Antarctica (cb Billy-Ace Baker)**—The idea of giant asteroids smashing into our planet has provided the plot line to many bad movies, a recent television miniseries on the subject being no exception.

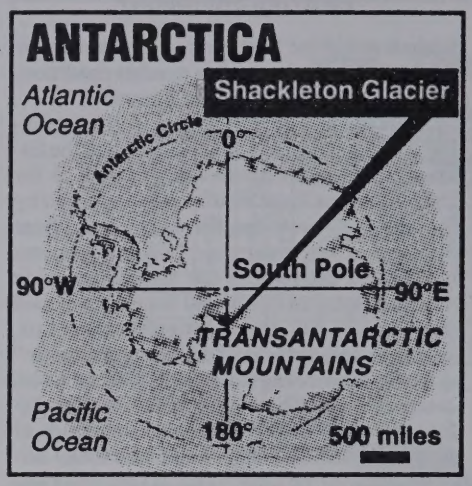
But down here, to scientists ranging about outdoors atop 90 percent of the world's ice, the idea of asteroids smashing into Earth and imperiling life as we know it is not just plausible, it is verifiable.

One extinction occurred 251 million years ago and almost rendered the earth a dead planet. After the so-called Permo-Triassic extinction, only 4 percent of the world's plant, animal and microorganism species survived.

Gregory Rettalack, a University of Oregon paleogeologist specializing in fossil soils, is one of a small group of scientists who, since the 1950s, has been going to Antarctica looking at the fossilized evidence of past climatic changes in hopes of getting clues about future ones. "We almost lost (all life) at that time. Everything says the)Permo-Triassic) extinction was very abrupt," Rettalack said.

Specifically, they are studying the ominous trend of global warming and the possibility that it could eventually melt Antarctica's ice. Evidence of past such occurrences there show how resulting rising sea levels could trigger Earth's next great die-off, exterminating many forms.

Since the cold engulfed Antarctica at the beginning of the last ice age, 30 million years ago, it has been virtually untouched by most forms of life. Certainly the only human inhabitants have been a tiny trickle of visiting explorers and scientists over the last 100 years.



Knight-Ridder graphic

Normally, Antarctica is a warm, lush, living place. There is abundant evidence of this in the rock and soil.

Scientists scour Antarctic rock and soil for clues to Earth's long-term climatological cycles and clues to how such changes might affect life today. They have to make do with the mere 2 percent of the vast continent that lies uncovered. Most of what they can get at is rugged mountain peaks and crests poking through the ice cover.

The most fruitful expeditions have been at various sites along the spectacular Transantarctic Mountain chain.

Finding rock of different ages, then finding fossils inside the rock, they painstakingly follow the progress of plant and animal species over millions of years. When the fossil trail stops suddenly, replaced by new life forms, they know they have encountered an extinction.

The first dinosaur bones ever found in Antarctica came out of the Transantarctics in 1991. William Hammer of Rock Island's Augustana College cemented his name in paleontological history with that find.

The bones he pulled out, the remains of two enormous beasts that once roamed warm, humid Antarctic savanna, eventually will go to Chicago's Field Museum of Natural History.

Edith and Tom Taylor, University of Kansas paleobotanists, have located whole petrified forests in the mountains, some from dinosaur times, some from times before dinosaurs. The stumps stood upright just as they grew when the world was warmer, and fossilized fallen leaves laid about like stony ground litter.

Rettalack, Hammer, the Taylors and others of the Antarctic paleontological group are eager to dig in the rock around Schackleton Glacier, much of it almost perfectly bracketing the Permo-Triassic extinction.

There are abundant 251-million-year-old deposits there bearing fossils of thriving plant communities that soon were to be annihilated in the extinction.

Other deposits are 240 million years old. The fossils they bear show new life forms that finally rebloomed more than 10 million years later. These new arrays of plants, animals and microorganisms ruled the world for 12 million years, only to disappear with the rise of the dinosaurs 228 million years ago. ❑

Byrd Plane

***The Press*, 25 Dec 1996, CHRISTCHURCH, New Zealand (AP) (cb Billy-Ace Baker)**—The wreckage of the first plane to land on the Antarctic mainland has been embedded in a frozen lake since 1929. Now, aviation enthusiasts want to dig it out.

The plane, owned by explorer Adm. Richard Byrd, became the first to land on the continent in January 1929—and was the first to fall victim to the region's unforgiving weather a short time later.

The plane had been tethered down to hold it against 100-mph winds, but it broke loose, flew backward for half a mile and crashed onto the ice, where it has remained for 67 years.

New Zealand aviation enthusiast Chris Rudge and his partner Andrew North have been successful in obtaining salvage rights to Admiral Richard Byrd's Fokker Super Universal aircraft, named the *Virginian*, which was abandoned on the Ross Ice Shelf of Antarctica in the 1920s. A spokesman for the group, Chris Rudge, said Admiral Byrd's descendants had gifted the aircraft to New Zealand as a way of thanking the country for the help Byrd received while he passed through on his various expeditions. Now comes the hard part—getting the aircraft back to New Zealand.

*"At the end, only two things really matter to a man: the love and understanding of his family. Anything and everything else he creates are insubstantial; they are ships given over to the mercy of the winds and tides of prejudice. But the family is an everlasting anchorage, a quiet harbor where a man's ships can be left to swing in the moorings of pride and loyalty.—**Richard E. Byrd***

Two of the aircraft Byrd used during his Antarctic expeditions are already preserved in the United States.

But Rudge said the Canterbury Museum in Christchurch, which has a large collection of Antarctic artifacts, might get ownership of the plane and display it at Christchurch Airport.

"We had to convince them the aircraft would be better displayed in Christchurch with its Antarctic connections, rather than somewhere like the Smithsonian (Institution in Washington, D.C.), where it would be lost among the other exhibits," he said.

Byrd made his first flights in Antarctica from a base he called "Little America," the area from which Roald Amundsen launched his overland expedition to the South Pole in 1911.

On Nov. 28, 1929, Byrd and three other crewmen became the first aviators to fly over the South Pole in their Ford Trimotor plane, the "Floyd Bennett."

The first flight over Antarctica was made in 1928 by Australian aviator Sir Hubert Wilkins, who flew from an airstrip on Deception Island. ❑

Drilling Project to Unlock Secrets of Global Climate Change

CHRISTCHURCH, New Zealand, 3 Oct 1997 (AP)—A major deep drilling project has begun in Antarctica to unlock the secrets of global climate change going back millions of years, organizers said Thursday.

Six drillers from rigs around the world, including Papua New Guinea and Mongolia, flew to New Zealand's Scott Base this week to start the project

The drilling of rock cores may unlock clues about the Earth's past and future climate.

Antarctica New Zealand, the government agency that manages New Zealand's involvement on the ice, said the crew is part of a team of 11 drillers, 16 scientists and nine support staff who will live and work at Cape Roberts, 87 miles (140 km) north of Scott Base, until December.

The Institute of Geological and Nuclear Sciences, Victoria University and Antarctica NZ have been planning the project for 10 years. An advance party has already established the project's base camp at the site and a route to the drilling area about 10 miles (16 km) off shore.

Like the pages of a history book, [the rock] should reveal the changes in Antarctic climate conditions during this period...

"Sea ice conditions are the critical factor and recent temperatures in the minus 30s (Celsius) appear to have created a stable platform for the drill rig," project chief scientist Peter Barrett said.

The rig will sit on 6-foot (2 meter) thick sea ice and extract two 1, 300-foot (400-meter) rock cores from 650 feet (200 meters) below the ocean surface.

Barrett said the rock was formed between 30 million and 300 million years ago.

"Like the pages of a history book, it should reveal the changes in Antarctic climate conditions during this period and links to ice sheets and sea level," he said.

The Cape Roberts project is being supported by six nations, and scientists from New Zealand, the United States, Italy, Germany, Britain and Australia will be studying the extracted core at laboratories at McMurdo Sound and Scott Base.

Their Cape Roberts camp has been built inside converted refrigerated shipping containers.

The 20-ton rig will be dragged by bulldozer and sled over to the drilling site this weekend and the first core is expected to be recovered Oct. 12 ❑

Bring Home the Dome!

by Sandra Markle

I would like to invite you to share the vi sion for an exciting opportunity—the creation of a special National Antarctic Museum.

Plans are under way to add new facilities at the South Pole station that will expand its size and research capabilities. These plans, however, include removing the dome which has sheltered the main station buildings for the past two decades and retrograding it as trash. Instead, let's BRING HOME THE DOME! When it's home, let's reconstruct it as a national Antarctic museum—perhaps to be called the Richard E. Byrd National Antarctic Museum and let's pack it full of exciting interactive learning experiences about past exploration, current research and, most of all, the incredible continent of Antarctica.

I'm pleased to share that an effort is under way to make this vision a reality. Senator John Glenn has expressed enthusiasm for the project. So have a number of Antarctic researchers: Gerald Kooyman and Ellen Mosley Thompson. Brian Shoemaker of the American Polar Society has been actively working toward this goal. At a meeting of the Byrd Polar Research Center Executive Committee, the group voiced unanimous support of the idea of BRINGING HOME THE DOME to Ohio State University and constructing the museum in connection with the center.

The opportunity to transform the Antarctic Dome into an interactive museum for the children of the 21st Century offers exciting possibilities. It's rare when something that might otherwise might become trash has an opportunity to inspire future generations. Come share the vision! Please speak up and add your words of support! ❑

Arctic Explorer Is Rescued After 12 Days Alone on Ice Floe

***Columbus Dispatch*, 26 July 1997 (cb Peter Anderson)**—Arctic explorer Will Steger has been rescued after 12 days drifting alone on a tiny Arctic ice island, the National Geographic Society reported yesterday.

A helicopter picked up Steger Thursday afternoon and brought him to the Russian icebreaker *Sovetskiy Soyuz*, the society said.

Steger, of Ely, Minn., had begun a solo 500-mile walk from the North Pole to Canada, but abandoned the effort because of intense fog, dangerous ice and fatigue, officials said. ❑

Drillers Retreat As Ice Breaks Up

By Peter James Spielmann, SYDNEY, Australia (AP)—Scientists from six nations scrambled to evacuate an Antarctic seabed drilling project when the ice began breaking up in a storm, the team said Monday.

It was the second straight year that drilling was disrupted on the Cape Roberts project, an effort to determine if ancient Antarctic ice sheets are susceptible to human-induced climate change.

"A ferocious and unexpected storm ... took out a chunk of ice" three miles wide, chief scientist Peter Barrett told The Associated Press by telephone from the project's new base camp. He said that left just a half-mile of ice between the drill rig and the open sea, making it too dangerous to remain at the site. On Saturday, 20 drillers and support staff dismantled the 50-ton drilling rig and moved it 15 miles to stronger ice.

"It was an orderly retreat," said Barrett, a professor at New Zealand's Victoria University in Wellington. "There never was a danger to people."

The drilling was taking place off Cape Roberts, 80 miles northwest of New Zealand's Scott Base and the U.S. McMurdo Station on McMurdo Sound. The researchers said they planned to sink another hole in October or November of 1998. The $5 million drilling program is a joint venture of the United States, Australia, Germany, Italy, New Zealand, and Britain.

Since drilling began in mid-October, researchers had recovered rock core samples from 490 feet below the ocean floor, which may reveal climatic conditions dating back to between 17 and 22 million years.

"We were pretty excited about it" because they had never studied rock samples that old, Barrett said.

Before the setback, the scientists had hoped that by late November they would reach samples as deep as 2,600 feet, representing rock as old as 100 million years.

In 1996, the project also had bad luck. The ice broke a number of times and did not become thick enough to support the drill rig.❑

High Krill Catch Limit Worries Some Biologists

Source unknown, 1 Nov 1996, SYDNEY, Australia (AP) (cb Peter Anderson)—The penguins, seals and whales of Antarctica survive by eating krill, and they share their food with a protein-hungry world.

Humans scoop up tons of the shrimp-like creatures each year for their own use—as fish food, fish bait and as a delicacy for seafood lovers who savor its crab-like taste.

Harvesting of krill is still unregulated in the Australian Antarctic waters of the southeast Indian Ocean. But while Antarctic nations provisionally approved setting an annual limit on fishing in these waters, the proposal has raised debate over whether the limit is too lax.

Under the proposal by the Australian Antarctic Division—expected to be approved today—the krill catch will be limited to 850,000 tons a year — about seven times the amount that krill harvesters around the world take in every year.

Greenpeace and some scientists are uneasy about setting a limit...on a species that forms the basis of the entire Antarctic food chain

Greenpeace and some scientists are uneasy about setting a limit that high on a species that forms the basis of the entire Antarctic food chain. They point to the overharvesting and mismanagement of other species such as fur seals, whales, salmon and bluefin tuna.

Most of the trawlers harvesting krill come from Russia, South Korea, Poland, Ukraine, Chile and Japan.

Bill Fraser of Montana State University said studies show that global warming has cut into krill stocks off the Antarctic peninsula, in turn affecting the food supply for penguins, seals and other predators.

"It would seem prudent to err on the side of caution at this point, unless they feel they truly have a handle on these complex issues," said Fraser, who has been studying marine ecosystems in the area.

But other scientists defend the Australian plan as conservative, flexible and ecologically sound; they say harvesters will take only a tiny fraction of the half-billion tons of krill that swarm around Antarctica.

Stephen Nicol, the Australian Antarctic Division's chief krill biologist, says that fishing would be reduced or suspended if krill stocks or predator species declined.

In Japanese markets, whole frozen krill tail meat sells for $3.45 a pound, Nicol said.

Nicol said demand for these crustaceans will only increase as new industrial uses are found. ❑

Hometown Dedicates Statue to Admiral Richard E. Byrd

by Peter Barretta

An 8-foot bronze statue of Admiral Richard E. Byrd and his dog Igloo was dedicated on 14 July 1997 in downtown Winchester, Virginia, to honor one of the city's favorite sons. More than 500 people, everyone from legislators, dignitaries, the Navy band and residents, assembled to pay tribute to the explorer and aviator.

The nation admired the explorer and aviator for decades as he bounded over the frozen continent of Antarctica, covering more than 500,000 miles of territory. Daring, brave, and absorbed with the unknown, Byrd became an object of fascination for millions.

Secretary of the Navy, John H. Dalton, praised Byrd as "one of fine most distinguished maritime explorers in our nation's history. Byrd's scientific contributions continue to fuel exploration on Earth and space, Dalton said. "He was a man who loved a challenge. He was a man of firsts: the first to fly over the North Pole, the first to fly over the South Pole, the first to explore and map the vast continent of Antarctica. Amazing feats and especially so, given our reliance today on the wonders of navigation now available to us, like the global positioning system, "Dalton said.

"You honor our nation by your commitment to the preservation of our past triumphs, Dalton told the crowd.

Not far from the statue of his uncle sat former Senator Harry F. Byrd, Jr., who said, "My uncle, I am confident, would be tremendously pleased with this tribute of affection and honor accorded him by the citizens of his hometown."

Byrd's daughter, Bolling-Byrd Clarke added a new dimension to her image of her father. At the dedication, she spoke not of the many explorations that kept Byrd and his dog Igloo, away from his family in Boston. Instead she spoke of him as a father and husband. She easily recalls watching him shave and taking family walks, and that they would go as far away from civilization as we possibly could, spending vacations in secluded areas of Maine. And even when she asked her father for a glimpse into his adventures, he would forgo the work stories in an attempt to focus on family issues.

Norman Vaughan, the last survivor of the first Byrd Expedition (1928-30), was unable to attend the dedication of the Byrd statue. Vaughan, who lives in Alaska, sent his regards in a letter. They read in parts:

"Admiral Richard E. Byrd has been and still is my hero. He was responsible for all the scientific work being conducted in Antarctica. His contribution to the wealth of America is ever present and becomes even larger with time. . . .I greatly regret not being with you today to share in this momentous and deserved occasion."

The statue of Admiral Byrd was funded entirely by contributions, large and small, from members of the community, friends, neighbors and admirers. The eight-foot-tall statue depicts Byrd wearing a polar bear fur coat, caribou skin pants and lamb's wool boots. Byrd's pet terrier, Igloo, who accompanied him to Antarctica, is nestled against his leg.

A nationally known sculptor, Dr. Jay Morton, created the statue "after two years of patient study." It was a long-awaited celebration for Dr. Morton, who vowed more than six decades ago to pay tribute to Admiral Byrd. As a young scout, Morton met the admiral as part of an Eagle Scout pinning ceremony. At that moment, Morton said, Byrd overwhelmed him. In 1982, Morton finished the sculpture that would be turned into the bronze statue that now stands in Winchester. ❑

Preserving a Priceless Library of Ice

A Denver center houses more than 13,000 ice cores, a frozen treasure of polar-climate records

The Chronicle of Higher Learning, 2 Aug 1996, p. A7, by Kim A. McDonald, DENVER (cb Peter Barretta)—The one thing Joan Fitzpatrick never wants to see on her office floor is water. She even has nightmares about it. In a recurring dream, she arrives at work, opens the door, and finds—to her horror—that she is standing ankle deep in water.

It's not a situation most people would consider particularly frightening.

But as technical director of the National Ice Core Laboratory, a repository for more than 13,000 ice cores collected by U.S. researchers in Greenland and Antarctica, Ms. Fitzpatrick can't imagine anything more awful than seeing the nation's treasure of polar-climate records reduced to a giant puddle of water.

KEN ABBOTT, U of COLORADO

SPECIAL SAFEGUARDS

Such a disaster is highly unlikely, though. Safeguards are designed to prevent even the slightest damage to the priceless cores, which have been collected over four decades and stored here in a $3-million, 8,000-square-foot repository, built in 1993 by the National Science Foundation, the U. S. Geological Survey, and the University of Colorado at Boulder.

In an emergency, any of 30 alarms would alert Ms. Fitzpatrick instantly to the problem. If the laboratory's main power fails, a generator is automatically turned on. If the compressor that cools the facility breaks, a replacement goes into service. If both the main power and the generator go out, a compressor that operates on natural gas switches on. If all else fails, thick insulation in the building can maintain the interior temperature to within one degree centigrade for 24 hours with the lights turned off.

"And if someone drives a forklift through the wall of the building," she says, interior pipes can be connected to a tanker truck filled with liquid carbon dioxide. "That will allow us to stabilize the temperature until the problem can be fixed," she says.

BITTER COLD

Maintaining the facility's interior temperature is no simple feat. Bitterly cold conditions—far colder than are needed to keep ice frozen—are required to minimize physical changes to the ice cores. If the cores are allowed to approach the freezing point, tiny bubbles of ancient atmosphere—trapped in the ice for thousands of years—could squeeze through fissures and escape.

So Ms. Fitzpatrick and her colleagues keep the air in the main ice-storage area at a bone-chilling minus 36 degrees centigrade, or minus 32.8 degrees Fahrenheit, requiring visitors to the facility to dress in clothing more appropriate for winter in Antarctica. Employees rummage through off-season skiwear sales in search of the gloves, hats, and coats.

The meter-long cores are kept pristine within silver, plastic-lined canisters arranged like library books on shelves. The analogy is appropriate; this library of ice contains the seasonal records of the earth's climatic history for the past 250,000 years.

Like pages from a book, each season's layer of compressed snow has trapped within it gases and particles that can tell glaciologists something about ancient volcanic eruptions, distant storms, precipitation, the direction of air currents, and sudden shifts in temperature.

The contents of the frozen archive are accessible on the World Wide Web (http://instaar.colorado.edu/nicl/welcome.html). Any researcher who wants to study a specific period of the earth's climate can check on the condition and availability of the appropriate core.

The repository—called "nickel" by glaciologists, after its acronym, NICL—has ice cores from 20 U.S. expeditions, going back to a 1958 drilling expedition at Richard E. Byrd's former Little America camp, on the Ross Ice Shelf in Antarctica. (A similar facility at the University of Copenhagen in Denmark holds cores retrieved by European scientists.)

CLEAR CORES

Of greatest interest to researchers currently is a set of ice cores nearly two miles in depth from the most recent major American expedition, the second Greenland Ice Sheet Project, or GISP2. This effort, completed in 1993, produced the most complete record of global-climate change in the Northern Hemisphere over the past 110,000 years.

It also produced the clearest cores that Ms. Fitzpatrick, a glaciologist with the U.S. Geological Survey, has ever seen—ice in which the bands of summer and winter precipitation can be observed with crystal-clear precision.

"Each cloudy and clear band represents one year of net annual accumulation," she says, pointing to the rings in a GISP2 core that can be seen clearly over a light table. (The thin, cloudy bands were produced by the sublimation of snow during the sunny Greenland summers, which left behind a concentrated layer of dust and residue; the thick, clear bands are the result of snow accumulation during the winter.)

Because colder periods in Greenland were typically associated with less snow and high winds, which carried large amounts of dust to the ice sheet, quantities of dust and ice in each band give scientists another measure of temperature.

Seen under a microscope, the size and shape of the blue, green, violet, and white ice crystals can also tell researchers something about past temperatures, while chemicals and gases, such as carbon dioxide, provide information about the composition of the ancient atmospheres.

Until recently, most of those tests were done by scientists working in the field, in trenches beneath the icecap. During the GISP2 drilling, however, U. S. researchers decided that this practice could no longer be continued. It was too expensive, too labor-intensive, and too difficult.

"We had to have lots of flights to bring people up to Greenland, big camps, lots of food, and lots of fuel," says James W. C. White, an associate professor of geological sciences at the University of Colorado who worked on GISP2 and now serves as interim scientific director of the ice-core facility. "We thought it would be better to box it up, send it to NICL, and have scientists come to Denver when the sampling can be done in a more controlled environment." ❑

Innovative Pair Blazed Trail to Recover WWII Fighter Plane

They recovered a P-38 that crashed in Greenland during World War II.

***Columbus Dispatch*, 11 Apr 1997, by Don Baird (cb Peter Anderson)**—Richard L. Taylor and E. Patrick Epps don't know if they'll ever be allowed to fly the one-of-a-kind aircraft they worked 12 years to recover from the Greenland icecap, they said yesterday at Ohio State University.

It doesn't matter, they said.

"We have done what everybody said we couldn't do," Epps said.

"Just because we wanted to," Taylor added.

They mounted seven expeditions to Greenland to try to locate and then recover two B-17 Flying Fortress bombers and six P-38 Lightning fighters that crashed on the icecap in July 1942 during World War II.

After spending $2 million of their own and investors' money and enduring physical hardships, technical headaches and heartbreaking setbacks, they recovered a P-38 and shipped it back to the United States.

The plane, a Lockheed P-38F, resides at the Bell County Airport at Middlesboro, Ky., where millionaire entrepreneur J. Roy Shoffner is financing its restoration to flying condition.

Bob Cardin, project manager for the restoration, said in a telephone interview that the work should be done in another two years. Because the P-38 is an "F" model, one of the earliest versions of the Lightning, it will be the only flyable plane of its kind in the world.

Ohio State's Ian Whillans invited Epps and Taylor to speak yesterday at OSU's Byrd Polar Research Center after reading a book about their exploits. Whillans also has endured Greenland's bitter weather to drill into the icecap. An OSU expedition leaves Saturday for almost the same spot in Greenland from which the P-38 was recovered, he said.

When he read how Epps and Taylor dealt with much the same problems as do scientists for the sake of adventure and challenge instead of science, Whillans was fascinated by their ingenuity and grit.

"They've invented all these methods—independently and on a grander scale—these are very smart guys," Whillans said. "There are too many people who just get stopped cold by these things."

Epps, 63, operates Epps Aviation, and Taylor, 61, is an architect. Both live in Atlanta.

They said they no longer play a role in the fate of *Glacier Girl*.

After 12 years of struggling, they were out of money by the time the P-38 was recovered from 268 feet below the surface of the ice.

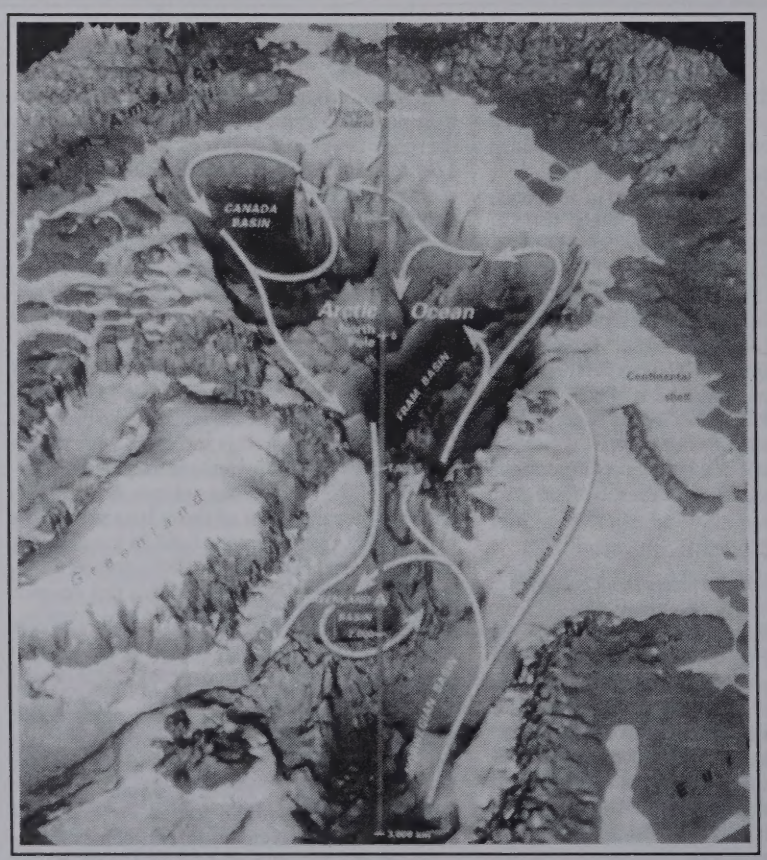
'He bought out our interests," Taylor said of Shoffner. "He was rich, and we were poor."

Epps said restoration of the fighter will cost Shoffner "probably a million dollars or more."

One of their worst moments came in the summer of 1990, when they reached one of the B-17s buried beneath the ice and realized it was crushed beyond repair. They recovered only an intact top turret, the two machine guns mounted inside it, a control yoke and some other small pieces of equipment.

Theoretically at least, one more B-17 and five P-38Fs remain in Greenland for the taking. A private Danish expedition is expected to make the next attempt at recovery, Taylor and Epps said. ❑

Thaw in U.S., Russia Relations Allows Release of Arctic Data



(AP)—This graphic, which was released Tuesday by the National Geographic Society, is part of study by the U.S. and Russia. It shows an area in Greenland, left, where warmer surface water is pulled in and cooled, forming a mass of deep ocean water.❑

***Pensacola News Jurnal*, 15 Jan 1997 (cb Billy-Ace Baker), WASHINGTON (AP)**— Scientific knowledge about one of the least understood parts of the globe— the Arctic Ocean—took a leap forward Tuesday as information collected by U.S. and Russian military researchers was released publicly.

Some of science's most sought-after data have come in from the cold," said Vice President Al Gore.

The first of four planned compact disks was released in ceremonies at the National Geographic Society. The disks contain millions of observations collected in the Arctic over 40 years by Russian and American researchers, largely for military purposes.

"Buried in these...observations can be found clues to the puzzle of climate change," Gore said.

The release of more than 1.3 million observations "doubles the data available on the Arctic Ocean."

But with the easing of international tensions, Gore's interest in the environment led him to ask the CIA if arctic data could be made available to scientists. Later, Gore said, he also approached Russian Prime Minister Viktor Chernomyrdin about sharing scientific data.

The result, Gore said, is the series of data disks being released for scientists to study. The first, made public Tuesday, covers the Arctic Ocean in winter. Summer ocean data will come next followed by arctic weather data and, finally, information on arctic ice cover.

Climatologist Norbert Untersteiner of the University of Washington explained that the cold water sinking in the Greenland Basin can be tracked along the floor of the Atlantic Ocean and even into the Indian Ocean following long-distance currents.

The chimneys of sinking water are individually only a few miles wide and last only a short time, Untersteiner said, so scientists expected them to be hard to detect. But when the full set of Russian data was examined, the sinking water stood out clearly. "I was surprised," Untersteiner said. ❑

NSF Director Celebrates 'Cold Fusion' Between Locals, Scientists

The Arctic Sounder, **14 Aug 1997, p. 9, by Duncan Adams, BARROW**—The collaborative spirit between scientists studying the arctic and Native communities of the North Slope serves as a model for similar research efforts elsewhere, according to Neal Lane, director of the National Science Foundation

Lane was one of many visiting scientists attending the 50th anniversary last week of the founding of the Naval Arctic Research Laboratory in Barrow. In October 1993, President Bill Clinton appointed Lane to be director of the NSF, a position Lane described as "the best job in government, at least for a scientist."

"I think the arctic really is a high priority for the world because the water touches so many countries in its circulation and the air touches so many countries," Lane said. "And we still don't understand as well as we need to the interaction between the air, the atmosphere, the ice, the water, the environment on land and in the sea.

"The arctic is an increasingly important, I would say, region of the world. And that's certainly true for the United States, but it's also true for Russia and Japan because of the importance of what goes on here, in Japan and other countries," he said.

The NSF primarily supports basic research in science and education. It was one of the contributors that helped fund the NARL anniversary.

Lane was asked about the perception that the federal government funds research in the Antarctic more generously than in the Arctic.

"I think (that perception) is actually not correct," he said. "The federal support of research in the Arctic and the federal support of research in the Antarctic are roughly the same."

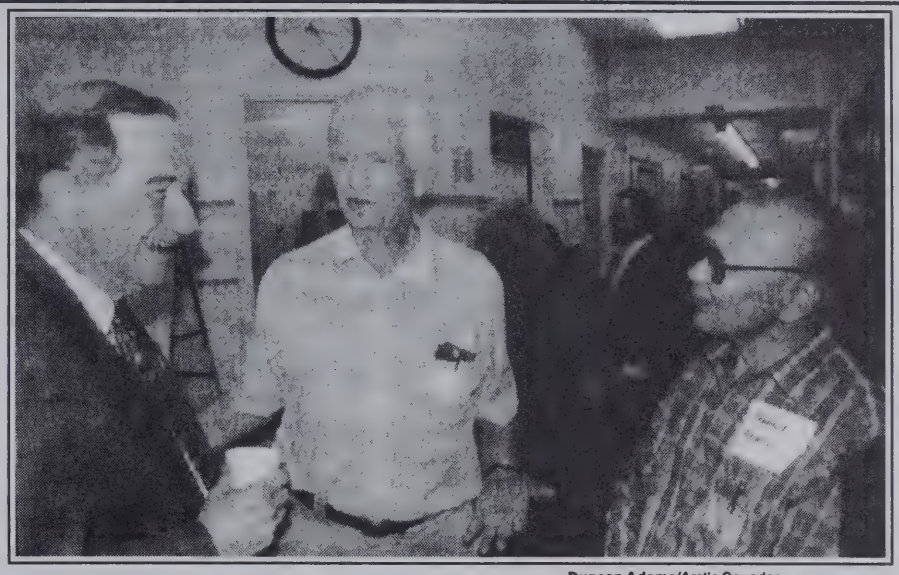
Lane acknowledged that the NSF itself spends more money in the Antarctic, where it operates three research stations.

"The NSF budget for the Antarctic is much larger than for the Arctic, but that's because we have a special responsibility there," he said. "Also, it is expensive to do research in the Antarctic because nobody lives there otherwise. We join with other agencies on certain projects, but we've been given that total responsibility to ensure that the U.S. has an influential presence in the Antarctic and to support scientific research there."

Lane said he attended the NARL conference to listen, to learn and to answer questions about research.

"Whenever I visit a community, or research lab, or university, it's entirely two-way (communication)," he said. "I want to hear from the researchers who are there, members of the community where there is an interaction between the scientific research and the community.

"Here, I hear very good things about that (interaction). It's a good story to tell, a model, if you like, for what we might want to see happening other parts of the country," Lane said. (See "50th Anniversary," p. 5) ❑



Duncan Adams/Arctic Sounder

During a break in the action Aug. 7 at the 50th anniversary celebration of the Naval Arctic Research Laboratory, Neal Lane, left, director of the National Science Foundation, chats with Max Brewer, center, a former NARL director, and Frankie Akpik, a former NARL employee.

Whaling Party Rescued As Ice Breaks Up

by Brian Shoemaker

"AGVIQ!" An electrifying word in the town of Barrow, Alaska. A whale had been struck by one of the Eskimo whaling captains and was being towed to the shore-fast ice. It was Sunday evening, May 18, 1997, when the word was spread, a centuries-old call to the Iñupiat people of Barrow to come help cut up the whale and divide it amongst the community. It was cause for celebration and thanks. Men, women and children excitedly sped out to the ice edge on their snowmobiles to share in the effort.

A crowd of about 150 formed loosely along the ice edge, peering through the fog for sight of Captain Poe Brower and his crew with the whale. Suddenly a sound like a rifle shot was heard—a telltale indication the sea ice was breaking up. Quickly the more experienced Eskimo began to inspect the ice toward shore for cracks, but before they were done, the ice with the people on it began to rapidly drift northward, away from shore. There was a dash to jump the gap. Some made it and rushed to sound the alarm. Others—120 men, women and children—were too late and began to drift north into the fog-draped sea.

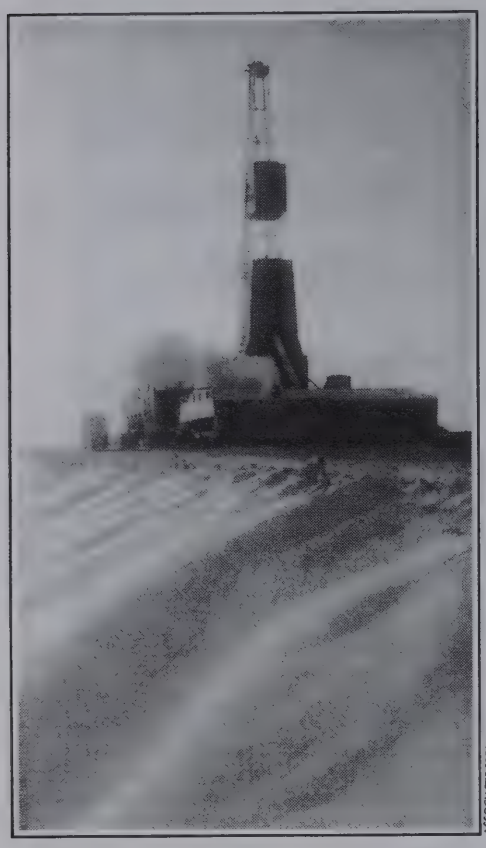
For centuries, Eskimo hunters have disappeared when the ice off shore unexpectedly broke up. A lucky few have reappeared after their memorial service when the ice blew back in. In general, however, it has been a tragic tale in the northern drama of life in the harshest living environment in the world.

However, the world has changed in the last 50 years—more rapidly for the Iñupiat people than most. The story of their adaptation to modern inventions is best dramatized by their handling of events during this Sunday outing.

When the ice began to drift, several pulled out their cellular phones and called to town for help. The whaling captains called in their positions using their global Positioning System pocket navigators. Those ashore alerted North Slope Borough Search and Rescue.

The NSB Search and Rescue service was organized in 1980 in response to the need to rescue people in emergency situations from the countryside, both the Arctic tundra and the polar sea-ice, and if, necessary, fly them to hospitals in Fairbanks or Anchorage. The equipment inventory includes a Lear jet, a Caravan and three helicopters, a Bell 212 and two Bell 214s, with an around-the-clock alert crew. Fortuitously, Price Brower, director of the Search and Rescue Service, was one of the whale hunters adrift on the ice.

Brower and others were able to guide the helicopters through the dense fog by listening to the beat of their rotors and taking them in by giving vectors to the pilots by radio. Women and children were evacuated first in trip after trip, then men and equipment. The rescue took 15 hours of steady flying. Price Brower, who was the last to leave the ice, said, "The real story here was about the foresight of the native leaders in developing the search-and-rescue service." ❑


ASSOCIATED PRESS

British Petroleum, Milne Point Facilities

Oil Firms Testing Field Near Refuge

***Columbus Dispatch*, 16 March 1997, JUNEAU, Alaska (AP) (cb Peter Anderson)**— Two oil companies said last week they might develop a field next to a wildlife refuge that President Clinton has made off-limits to oil drilling.

BP Exploration (Alaska) Inc. and Chevron USA Inc. said test wells drilled since 1994 indicate there could be 100 million barrels of recoverable oil in the Sourdough field. The two companies own petroleum rights in the field.

The companies plan to sink another test well next winter to determine if it would be profitable to develop the field, said BP spokesman Paul Laird. A decision on whether to develop the field could be made next year, he said.

The earliest production could begin would be 2001, Laird said.

The Sourdough field is 50 miles east of Prudhoe Bay, the center of Alaska's oil production. The field abuts the Arctic National Wildlife Refuge, considered the best prospect for a major oil field to replace Prudhoe Bay.

If the Sourdough field is developed, it could be a test of the industry's ability to safely drill around the wildlife refuge. Clinton vetoed an effort by Congress last year to allow oil exploration there.

Environmentalists who oppose opening the refuge to oil drilling say it could hurt a huge caribou herd that breeds in the area.

The federal government will work with BP, Chevron and state oil managers to make sure the Sourdough project does not harm the environment, Secretary of the Interior Bruce Babbitt said

"We're aware there's going to be some sensitivity because of the field's proximity" to the refuge, Laird said.

The Sourdough project would require up to 35 miles of extended pipeline to link up with BP's Badami oil field to the west.

Alaska officials said development of the Sourdough field would be proof that the state can continue to develop its resources without damaging the environment.

The Sourdough field would be tiny compared with the 12 billion barrels developers expect to get out of Prudhoe Bay by the time the oil runs out there.

But state oil managers say Sourdough and other smaller fields will help keep oil flowing through the trans-Alaska pipeline while Alaska searches for another major petroleum strike. Oil money accounts for four-fifths of the state's revenues. ❑

A Brief Historical and Clinical Account of the Effect of Scurvy on Polar Exploration

By Ralph M. Myerson, M.D. for The American Polar Society

Other than for difficult climatic and navigational conditions, no one factor has had a greater impact on polar exploration than has scurvy.

Scurvy is due to a deficiency of ascorbic acid (Vitamin C) whose function is the maintenance of the integrity of the connective tissue between human tissue cells. In its absence, there is cellular overgrowth due to impairment of cell boundaries, accompanied by bleeding from small blood vessels due to increased permeability of the vessel walls. Typical early symptoms include overgrowth and bleeding of the gums, painful joints and bones due to bleeding, and skin hemorrhages. Death is the ultimate result unless therapy intervenes.

Clinically, there is a delay of at least two months in the appearance of overt signs and symptoms of scurvy because, under normal conditions, the body contains a pool of ascorbic acid, constantly replenished by dietary sources, that supplied blood and tissues with amounts of Vitamin C sufficient to prevent the clinical manifestations of scurvy. In the presence of ascorbic acid deficiency, the body pool gradually decreases, but does not reach a critical level for some months.

There are no well-documented reports of scurvy prior to the time of prolonged sea voyages and other extended exposures to ascorbic acid deficiency.

In his voyage around the Cape of Good Hope in 1497-98, Vasco de Gama provided a remarkably accurate description of scurvy, the first to be associated with a sea voyage. Over the next 400 years and into the 20th century, scurvy was a major factor in determining the success of failure of many polar expeditions. The search for a Northwest Passage or other westward passages through the New World, the hunt for John Franklin, and the quest for the North and South poles resulted in thousands of scurvy cases, many fatal. Few escaped its ravages from Henry Hudson in 1610 to Robert Scott in 1911-12.

...the quest for the North and South poles resulted in thousands of scurvy cases, many fatal. Few escaped its ravages from Henry Hudson in 1610 to Robert Scott in 1911-12.

These tragedies occurred in spite of the knowledge that fresh fruits, vegetables and meat were both preventive and curative of scurvy. In 1747, James Lind had demonstrated the value of citrus fruits in treating scurvy with his famous experiment. There was, however, reluctance on the part of the scientific and naval communities to accept the concept that a disease could be caused by a dietary deficiency. Blame was placed on such things as foul air, lack of exercise, and poor climatic conditions. "Ptomaines," the nitrogenous products of putrefaction, were considered likely causes of scurvy as late as the 20th century. There were notable exceptions, however, by Cook in 1772, Ross in 1840, and Amundsen in 1911, whose insistence that their crewmen consume fresh meat and vegetables prevented scurvy on their expeditions.

It was not until 1912 that the scientific community accepted the fact that certain diseases were caused by dietary deficiencies. Another 20 years passed before the chemical hexuronic acid, now known as ascorbic acid, was identified as Vitamin C and assumed its rightful place in the prevention and treatment of scurvy. ❑

Scientists Warm to Mystery of Arctic Spring Coming Sooner

***Washington Times*, 17 April 1997, NEW YORK (AP) (cb Peter Barretta)**—Spring springs eight days earlier in the arctic than it did a decade ago, according to satellite measurements of vegetation coverage.

The measurements, recently analyzed by climatologists, suggest that plant cover appears earlier in the year, grows lusher and stays around longer in northern climes than it used to.

Though there is no way to determine whether the shift is natural or manmade, the trend may be an early sign of human-caused global warming.

"It's enough to make you believe that something might well be happening' said Terry Chapin, an ecologist at the University of California at Berkeley.

Climatologists analyzed vegetation data from three weather satellites operated by the National Oceanographic and Atmospheric Administration. They found that in 1991 spring began in many northern regions about a week earlier than it had a decade previously.

The researchers also found that plants increased the vigor of their photosynthesis during the peak of the growing season by 10 percent over the period, and stayed around about four days longer in the fall.

The analysis, published in the current issue of the journal Nature, isn't the first indication that things are heating up in the arctic. But it is the first study to show an ecological response to climate change over a broad region.

The effect has been observed between 45 degrees and 70 degrees north, a band stretching from the latitude of Minneapolis to northern Alaska. It is especially pronounced in the high arctic and in the interior regions of Canada and Siberia. That pattern is consistent with what computer models of human-induced global warming predict.

"These are all manifestations of a greenhouse effect, if you will, but consistent is the word," said Ranga Myneni, the lead author of the Nature paper. "I don't think I'm ready to say that global warming is upon us."

Mr. Myneni, a climatologist at Boston University, said that since finishing the Nature paper he has extended the satellite data analysis through 1994 and found that both the increase in total plant activity and the advance of spring are continuing.

The researchers measured plant activity by looking at the color of sunlight reflected off the ground. Sunlight bouncing off a green, leafy surface has a different color than light reflecting off bare ground. Satellites can detect that shift. ❑

U.S. Arctic Research Commission and U.S. Navy Announce Release of Arctic Ocean Bathymetry Data

(Multiple sources) 21 Aug 1997, WASHINGTON, (cb Peter Barretta and Harvey Segal)—The U.S. Arctic Research Commission and the U.S. Navy announced today that an agreement has been reached to allow the public release of the largest quantity of Arctic Ocean bathymetric data in history.

For the first time, accurate maps of the sea floor of the Arctic Ocean—one of the least known geographic regions on Earth—will be available to civilians, officials announced yesterday.

U.S. Navy nuclear submarines collected these previously classified data while conducting routine operations in the Arctic during the period of 1957-1982. The data sets to be made available for release will include water depth, latitude, longitude, general time frame, type of bottom sounder, and navigation system used in the Arctic Ocean for over 120,000 nautical miles of track. The scientific community has obtained funding to configure the data into a releasable format, which should take about six months. When released, the data will represent an order of magnitude increase in the bathymetric data available to the public worldwide. (See the accompanying map.)

The data will be used to improve the accuracy of hydrographic charts, to refine models of Arctic Ocean circulation, to enhance the understanding of global climate, and to predict the transport of contaminants. It will assist scientists in understanding the geological structure of the Arctic and the geologic history of the Arctic Ocean basin, as well as giving them the best definition yet of the plate tectonic development of the region.

Nonmilitary data have been hard to get because much of the Arctic is covered with ice that drastically limits the abilities of surface ships to do comprehensive sonar mapping of sea-bottom features.

The data release plan, recently approved by the Chief of Naval Operations (CNO), is the product of a cooperative effort among the Department of State; the Director, Submarine Warfare Division; the Oceanographer of the Navy; and the U.S. Arctic Research Commission.

Over decades, Navy vessels accumulated a horde of measurements—called bathymetry—on water depths and the configuration of the ocean floor at specific latitudes and longitudes.

U.S. Navy nuclear submarine tracks (1957-1982) for which release of bathymetry data has been authorized.

Such detailed data had never been available to academic oceanographers. As a result, USARC Chairman George Newton said, "The scientific community knows more about the topography of the planet Venus than it does about the bathymetry of the Arctic Ocean."

The U.S. Arctic Research Commission, established in 1984 by the Arctic Research and Policy Act, is responsible for recommending policies and priorities for the nation's Arctic research to both the President and Congress. One of its duties is to promote scientific cooperation between federal, state, and local agencies (see associated article, Vol. 2, No. 9, p. 11). ❑

Ozone Hole Wreaks Havoc on Food Chain's Bottom Link

The Washington Times, **31 March 1997, p. A13, by Roger Atwood, PALMER STATION, Antarctica (cb Peter Barretta)**—Starfish embryos develop ugly deformities and die before they are born. Sea urchins stop reproducing. Some plants produce their own "sunscreen."

Wildlife in Antarctica is starting to show the subtle but unmistakable effects of the ozone hole, the gap in the Earth's atmosphere that lets the sun's ultraviolet rays bombard the frozen continent for about four months every year.

Research at Palmer Station, a U.S. scientific base on Anvers Island, shows that high ultraviolet radiation damages forms of life such as plankton and mollusks and could work its way up the food chain. No one dares guess at the implications on animals such as plankton-eating whales and shellfish-eating seabirds.

Biologists Isidro Bosch and Deneb Karentz have found that embryos of limpets, starfish and other invertebrates do not grow properly when hit by the springtime assault of ultraviolet rays through the ozone hole. The embryos float by the millions near the surface of the ocean, where they are easy prey for predators —and ultraviolet rays.

"What we see is that they don't form in the normal pattern. The entire structure is essentially deformed ' said Miss Karentz, of the University of San Francisco. "If it's supposed to form in a sphere, it forms in a sphere with a big lump."

Adults do not seem to have the same problem because they have protective shells and live at much greater depths, she said.

Work in the field and the lab by Miss Karentz and Mr. Bosch shows that high ultraviolet-B (UVB) radiation damages the chromosomes of the animals, and "we can correlate the amount of damage to the amount of UVB exposure," Miss Karentz said.

The more radiation, the more damage to an animal's reproductive system.

Some creatures in Antarctica seem to taking their own protective measures. Arizona State University researchers found that the Antarctic pearl wort, a velvety, moss-like plant that thrives on rocky islands, develops a pigment known as a flavenoid that seems to make it more tolerant of heavy UV radiation.

How and why this happens is unknown, but the study "suggests these plants adapt to UV in ways that some plants can do and some can't ' said Chris Ruhland, one of the researchers.

"Ultraviolet radiation damages DNA replication, that's clear. But what these studies show is that this species is quite tolerant of UVB," botanist Xiong Fushen said.

Some mollusks have been found to carry a UV-absorbing amino acid that could protect them from the ultraviolet assault "in the same way that we use sunscreens," Miss Karentz said.

Studies are hampered by the fact that there was little detailed microbiological research going on in this area before the hole was discovered. So scientists have little baseline data and are studying an altered environment.

Work is only starting on how ozone depletion will ripple through the delicate food balance in Antarctica.

"We can still only speculate about what might be happening in Antarctic populations," Miss Karentz said. "The answer to the big question, the effects of UV on the complex interaction of species, is still unknown." ❑

Kelpers Poised To Be Even Wealthier

London Financial Times, **22 June 1997, By Stephen Fidler, STANLEY, Falkland Islands (cb Peter Barretta)**—Welcome to the socialist paradise created by Margaret Thatcher, where, since the Falkland Islands War, the state looks after you from cradle to grave, employs most of the work force, subsidizes inefficient industry and has embarked on a program of giant public-works projects.

Welcome to the Falklands.

This is the land where there is one soldier to defend every civilian (and 350 sheep), with the highest per-capita ownership of four-wheel-drive vehicles and fax machines in the world, where over the past decade fishing licenses have brought a windfall of $160,000 for each of the 2,200 population.

Fishing has brought riches to the Falkland Islands, but if the oilmen now exploring in Falkland waters strike pay dirt, the islanders could be richer than Croesus. A fairly modest 500-million-barrel field would yield $800,000 a year over two decades for every islander, assuming an $18-a-barrel oil price.

At that rate, the "kelpers" could afford sheiks as drivers.

It was just over 10 years ago that Britain, under pressure from the islanders, declared an exclusion zone around the islands and allowed the Falklands government to charge license fees to fishing boats. Now the islanders no longer depend on sheep and a weak world wool market for survival.

The 20th century arrived here late. The big sheep farms that were run almost in feudal fashion by absentee landlords in Britain have been broken up since the 10-week occupation of the islands by Argentine soldiers in 1982.

Until 1971, when the Argentines opened an air link to Buenos Aires, the islanders' only regular connection with the outside world was the monthly steamer to Montevideo, Uruguay. Television didn't arrive until the mid-1980s.

Three international flights week, one to Chile and two to Britain, have brought the islanders; physical mobility, but their society also enjoys a social mobility unknown before 1982. A middle class has emerged in the last decade, and emigration—which caused the population in the early 1980s to drop to 19th-century levels—has been reversed.

But if times are better, there are new questions to confront. One is the continuing drift of people away from the countryside, where the standard of living has fallen well below that in Stanley. The other is the growing dominance of the government in the islands.

Fishing license revenues accrue to the Falklands government; if oil is found, so will oil royalties and corporate income taxes. Distributing those revenues without creating a society of people on fixed incomes will not be easy.

Already the islanders enjoy a social safety net that exists elsewhere only in socialist fantasies: full employment, free health and dental care, and free education from the age of 16 to postgraduate level, all expenses paid. ❑

New Intercontinental Air Route: Cape Town to Antarctica

By Charles Swithinbank

March 1997—Polar Logistics, a company specializing in high-latitude cargo/passenger services, has begun direct flights between Cape Town and an ice runway in Dronning Maud Land. The company employs a Lockheed Hercules L-382G for the 4230-km flight, which takes around nine hours. Following a successful proving flight on 12 December 1996, the first passenger/cargo flight took place a week later.

Adventure Network International pioneered the concept of landing transport aircraft on naturally occurring, snow-free glacier ice on a continent where ski aircraft are the norm. With non-stop flights between Punta Arenas, Chile, and an ice field at Patriot Hills in the Ellsworth Mountains (80° 20'S, 81° 16'W). Although some government activities have been supported, the majority of clients have up to now been mountaineers, adventurers, or tourists.

There has long been a need for an airline to serve Dronning Maud Land (20°W to 45°E), and Polar Logistics, the company that organized the service, seeks to fill this need. In contrast to ANI, the main business of the new company will be servicing government-operated research stations. Within this part of Antarctica there are research stations belonging to Germany, India, Japan, Russia, and South Africa. Norway and Sweden maintain summer field stations.

Ever since permanently occupied stations were established half a century ago, scientists have dreamed of gaining access to the continent months before ships can reach it.

Five of the seven stations in Dronning Maud Land operate year-round, yet the handover of activities from one year's crew to the next is sometimes limited to the duration of a brief ship visit. By flying in front Cape Town, the handover period now can be extended, as required, to a period of weeks or months.

Another advantage is that access is no longer limited to states operating research stations in the area. Summer fieldwork can be undertaken at a fraction of the cost of chartering a ship. ❑

Antarctic Sea Ice Decline Tracked Using Whaling Reports

Scientists don't know if the cause is global warming.

Cape Cod, 4 Sept 1997 (cb Marcia Root)—In what commonly is predicted to be a portent of global warming, the vast canopy of sea ice that forms each year around Antarctica may have declined abruptly by as much as 25 percent in a 20-year period, according to research made public yesterday.

Every winter, the crushing shield of ice that caps Antarctica is swelled by 7.7 million square miles of seasonal sea ice—an expanse twice the size of the United States that can affect weather around the world. Since the 1970s researchers have monitored its annual ebb and flow via satellite—watching vast ice shelves shatter and jettison icebergs the size of Rhode Island into open seas. But they have been unable to detect any conclusive evidence of the changes predicted by computer models of a warming world climate.

Now, however, an Australian researcher who analyzed the meticulous records kept by whaling vessels operating around Antarctica before the satellite observations began has determined that the average extent of the annual sea ice shrank dramatically between 1950 and 1970 by almost three degrees of latitude.

"The decline occurred relatively quickly, beginning in the mid1950s and was largely complete by 1973," said Australian Antarctic expert William K. de la Mare, whose research is published today in the journal Nature. "Frustratingly, the change predates reliable satellite observations."

Several experts yesterday said the reported decline in the sea ice, if true, is "astonishing."

Kenneth C. Jezek, director of the Byrd Polar Research Center at Ohio State University, said, "The (study's) results are quite surprising and very intriguing. A 25 percent decline would be quite remarkable." But Jezek and other experts all cautioned that there has been no significant change in the pack ice in the 20 years during which it has been the subject of sustained scientific scrutiny. Nor is there any way to be certain that the decline documented by the whaling records stems from global warming. The natural forces involved are so complex that it is too soon to know whether the decline in the sea ice is due to normal variability of the weather or some more lasting climate change.

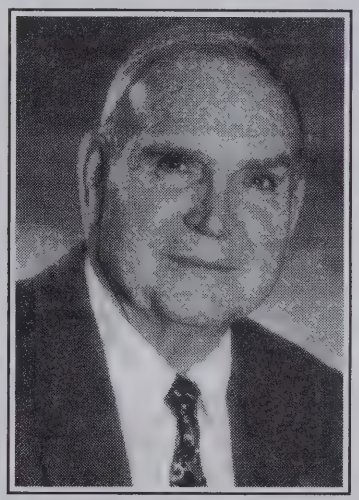
Many climate experts believe the sea ice is crucial to regulating the planet's climate, and a change of such magnitude could have global significance.

David Bromwich, a meteorologist at the Byrd Center, said that contrary to previous belief, new computerized models of the planet's atmosphere show there is an intimate connection between the state of the sea ice around Antarctica and weather patterns as far away as China.

For his study, de la Mare turned to a previously overlooked source: the International Whaling Commission and the computerized records it maintains of some 1.5 million whaling catches — every whale caught by factory ships in Antarctic waters since 1931. The whalers' logbooks recorded the precise longitude, latitude, date and the species of every leviathan they landed. ❑

NSF Names New Acting Head of Polar Programs

by Lynn Simarski



John B. Hunt

The National Science Foundation (NSF) has named John B. Hunt as acting director of the Office of Polar Programs (OPP). He assumed his new position on September 8, 1997.

Hunt formerly served as acting assistant director for Mathematical and Physical Sciences (MPS) at NSF. He has held positions of increasing responsibility within MPS as program director, division executive officer, acting division director, and directorate executive officer. As a result, he has considerable experience managing large, complex programs. Before coming to NSF's chemistry division in 1983, Hunt was a professor of chemistry at Catholic University, where he had served as a faculty member since 1962. He received his Ph.D. in inorganic chemistry from the University of Chicago in 1962.

Among other past professional experience, Hunt served on the Board of Directors of the Marine Science Consortium at Wallops island, Virginia for seven years and taught courses in chemical oceanography there. He also taught chemistry for two years at the U.S. Naval Academy. ❑

New Rules for Antarctic Visitors

Tourists visiting Theme Park Antarctica face a new code of behavior to protect the environment.

The Evening Post, 20 May 1997, p. 5 (cb Margaret Lanyon)—In the face of increasing numbers of tourists heading to Antarctica, New Zealand, has published the world's first set of rules for operators heading south.

But officials here concede the "rules" are in a delicate area of international law and operators could simply ignore them.

"As far as we can tell though, most international operators have positively welcomed the new guidelines," Stuart Prior, head of the Antarctic Division of the Ministry of Foreign Affairs and Trade said. He said the need for guidelines has become apparent as international operators target what he called Theme Park Antarctica.

The rules are for the Ross Sea Dependency: New Zealand's territorial claim over Antarctica. New Zealand's rules apply to New Zealand citizens and citizens of other countries which have signed the Antarctic Treaty. However an operator from a nonsignatory country cannot be made to abide by the rules.

In the 1995-96 summer, around 9,000 tourists visited Antarctica, double the number of visitors in the 1990-91 season. (That's not counting the numbers who take Qantas' series of one-day flights from Sydney and Melbourne). Most head to the Antarctic Peninsula, south of South America, but last year 800 visited the Ross Sea. Around 95 percent arrived by commercial cruise ships.

"The most popular tourist attractions are seal and penguin colonies, historic sites, scientific stations and areas of spectacular scenery," the booklet said. The most visited sites in the Ross Sea are historic huts and the US McMurdo and New Zealand's Scott bases.

Already the gentler tourism of being taken ashore by inflatables is changing.

"While most tourists and visitors arrive aboard ships for sightseeing, increasing numbers are seeking wilderness adventure experiences such as mountaineering, skiing, motorized over-snow travel, paragliding and scuba-diving."

At some scientific stations, restrictions have been set on visitors and some overcrowding has occurred at historic huts.

"In the Antarctic Peninsula area there is growing pressure to provide some onshore tourist facilities such as overnight accommodation, airstrips and wharves."

Under the rules, operators will have to prepare environmental impact assessments (EIAs) and will have to pay to have a New Zealand Government representative with them at all times they are in the dependency.

EIA are done to identify and predict the potential environmental impact of activities and to determine ways of preventing or minimizing any adverse effects

In the book's foreword Associate Foreign Minister Simon Upton says EIAs are important. "These assessments will become important source material for scientists studying the overall or cumulative impact of human activity in Antarctica."

Tourists are prohibited from taking any birds, mammals or native plants.

"Do not feed, touch, or handle birds or seals, or approach or photograph them in ways that cause them to alter their behavior. Special care is needed when animals are breeding or molting," it says.

Operators are warned, "the Antarctic environment is inhospitable, unpredictable and potentially dangerous". It adds: "Do not expect a rescue service; self-sufficiency is increased and risk reduced by sound planning, quality equipment and trained personnel." ❑

Snow By Many Other Names

***The Washington Post*, 9 Nov 1996, p. A25, by Stephen Loring (cb Nathan Frank)**—In his rejection of the belief that Eskimos (Inuit) have 200 words for snow, Michael Farquhar has stumbled into something of an academic brouhaha among linguists and anthropologists about distinctions between vocabulary and grammar.

As an anthropologist with the Smithsonian's Arctic Studies Center, I confront this issue on a regular basis. Inuktitut (the Eskimo language) does have a limited vocabulary—a limited number of words—for snow, yet the structure of the language—the grammar—enables Eskimos to add on prefixes and suffixes to create gigantic "words" with subtle yet distinct meanings.

I am no linguist, but I can think of a dozen such "words"; *amugaviniq* (old, hard compressed snow good for melting for water), *apigianngaut* (the first snow of autumn), *isiriartaq* (a yellow or reddish snow tinged with wind-blown dust), *kinirtaq* (heavy wet snow), *mannguq* (melting snow), *masak* (water-soaked snow as it is falling), *matsaaq* (slush), *natiruvaaq* (fine drift snow), *pukak* (crystalline snow often found beneath layers of new snow), *qannialaaq* (a light, gentle, falling snow), *qiasuqaq* and *qiqumaaq* (variations on snow that has thawed and refrozen and now has an icy surface).

Last January, with District residents already weary with a snowbound city, I was called up by a local TV news personality who wanted to send a reporter and cameraman around so I might point out as many examples of the 200 different kinds of snow as I knew. But I declined, being both a *kablunauut* (a white man) and *kipisarpuq* (sad and at a loss for words). ❑

Drilling an Ice Dome in West Antarctica

***Antarctic*, March 97, p. 13, NEW ZEALAND (cb Peter Barretta)**—Scientists from the Desert Research Institute, USA, will be drilling a 1,000-meter core from Siple Dome as part of the West Antarctic ice Sheet program led by Kendrick Taylor.

Siple Dome is a rise of ice located between two ice streams on the coast of the Ross Sea. The core's ice record is expected to span 80,000 years, including part of the last glaciation, and to have distinct annual ice layers back at least 6,000 years. The core will shed light on past coastal climates and ice stream dynamics.

It will also be compared with the deep cores obtained from the Greenland ice sheet to assess whether the rapid climate changes recorded in Greenland were global in extent. ❑

Pondering Penguin Population

***Antarctica Sun Times*, 2 Feb 1997, by JOC(AW) Jacqueline Kiel (cb Billy-Ace Baker)**-It's not easy to weigh a penguin, and when you're talking about 5,000 pairs at the smallest colony, that's a lot of work.

New technology, however, has made research involving weighing penguins quite easy, according to Dr. David Ainley, principle investigator for the McMurdo region.

This project, which started at the beginning of December and will continue through January, will focus on factors regulating Adelie penguin population size and colony distribution in the Ross Sea area.

"We're specifically looking at the factors that effect the geographic distribution of their colonies," Ainley said, "and we're trying to determine why their colony size has been increasing over the past 15 years and why the smaller colonies have been increasing much more rapidly than the large colonies.

One hypothesis as to why this is occurring deals with the amount of pack ice.

"We think it has to do with a lessening in the amount of the pack-ice cover in the Ross Sea, which in a sense makes it easier for Adelie penguins to forage and bring food back to their chicks," Ainley said. "Their chicks grow much faster and reach heavier weights, and by being heavier they have a better chance of survival once the parents cut them loose."

Conditions on the continent are perfect for this research. "We have a natural experiment here where, apparently, the pack ice cover is shrinking due to the rising air temperature and it's causing this dramatic change in populations," Ainley said. "We can assess the relative difference in processes in a little colony versus a big colony."

Three colonies of varying sizes are being studied. The colony at Cape Royds is the smallest, with 5,000 pairs of Adelies. Cape Bird has 80,000 pairs, while there are 280,000 at Cape Crozier. Additionally, the hope is that ice conditions over the five-year period will vary from light to heavy.

"We're just trying to understand the dynamics and the process by which these large colonies relate to the little colonies," Ainley said.

New technology is being used for the project. Field-team members Mike Beigel, an electrical engineer, and Nat Polish, a software engineer, put together an automatic system, which is designed to weigh penguins, without disturbance.

Each penguin gets a little radio frequency ID tag. When a penguin walks through a magnetic field set up by the research team, it is identified and weighed, and the information is stored in a computer. This way, when the bird arrives from sea full of food, it weighs itself, feeds its chick and then goes back to sea, again weighing itself. The computer will subtract the weights.

"Then we know how much food is being delivered to the chick," Ainley said. "If you had to do this by hand, it would be an insurmountable task, and it would be a problem to the penguins. So this is going to allow us to quantify the foraging effort of these birds. Additionally, team member Christine Rib, who specializes in radio tracking will determine where birds from different colonies are feeding. This information is important to understanding why some colonies may be growing faster than others.

Ainley is affiliated with HT Harvey and Associates, which is an ecological consulting firm in Mountain View, Calif. This is his 17th trip to Antarctica. He began studying Adelies at Cape Crozier in 1968 as a graduate student from Johns Hopkins University. ❑

The Color of Icebergs

***The Washington Times*, 24 Aug 1997, p-E13 (cb Peter Barretta)**

- White icebergs are marbled with trapped air.
- Blue icebergs are very dense.
- Greenish-blackish icebergs probably came off glacier bottoms.
- There are even bergs laced with dirt and rock ripped from mountains and valleys. ❑

Glacial Retreat

***Fairfax (VA) Journal*, 1 Aug 1997, p. A2 (cb Peter Barretta)**—North America's largest glacier is melting rapidly, and scientists say that global warming linked to the use of fossil fuels is the likely cause. Greenpeace announced that the Bering Glacier in Alaska has shrunk by up to 7.4 miles in length during the past century. "This is further evidence that weather patterns and changes in climate will become far more serious, affecting people's lives in greater ways, such as rising sea levels," said spokesman Jon Walter in Amsterdam. The environmental group reported that U.S. scientists have found sections of the glacier, which originates in Canada's Yukon Territory and terminates near the Gulf of Alaska, have thinned by up to 540 feet—20 to 25 percent of its total thickness. ❑

British Petroleum Invests $50 Million in Gas-to-Liquids Test

***The Arctic Sounder*, 14 Aug 1997, p. 12, (AP), ANCHORAGE (cb Jake Akpik)**—British Petroleum Co. is the latest North Slope oil producer to explore the possibility of converting natural gas directly into a room-temperature liquid that could be transported via conventional oil pipelines and tankers.

The company said Aug. 6 it will build a $50 million-plus pilot plant to test the so-called gas-to-liquids technology, and will decide within a few months where to put it. While the project would be aimed at eventually getting BP's huge North Slope gas reserves to market, the demonstration plant won't necessarily be in Alaska.

BP said it could have the 300-barrel-a-day pilot plant running by 2000. The company said its three-stage process can turn natural gas into diesel fuel and other clean-burning fuels. These products are sometimes called "white crude" because of their purity and clarity in comparison with ordinary crude oil.

A successful gas-to-liquids process has been long sought by oil companies because it would transform gas into products that are easier to store and transport. That's crucial because it's too expensive to build pipelines to gas fields that are far from gas markets, and the North Slope gas fields are several thousand miles from the big gas markets of the northeast and midwestern United States.

Besides making North Slope gas marketable, successful white crude technology could increase oil production. That's because the extra liquids moving through the 800-mile trans-Alaska pipeline from Prudhoe Bay to Valdez could provide enough extra revenue to keep the pipeline operating longer. That would permit existing North Slope fields to pump longer and allow production from fields discovered after the pipeline would otherwise have been shut down. ❑

The American Polar Society membership lapel pins have arrived. They are a work of art with an Emperor penguin and a polar bear against a background of the sun riding low on the horizon of a pale blue summer sky. This is surrounded by brass lettering of the American Polar Society set in a field of black, symbolic of the six-month winter at each of the poles. Price is $5. An order form is inside the front cover.

Thank you!

Scientists Resort to Publicity to Help Raise Money

***Columbus Dispatch*, by David Lore (cb Peter Anderson)**—Three years ago this month, Lonnie G. Thompson, an Ohio State University glaciologist, breakfasted with Al Gore at the White House, hoping to convince the Vice President of the need to retrieve rapidly disappearing records of climate change over the last 20,000 years.

The history is locked in polar icecaps and mountain glaciers in some of the most remote regions on Earth.

Ice cores removed from these formations provide clues to the climatic conditions that existed long before anybody started keeping written records.

By collecting enough cores from around the world and analyzing them for things like oxygen content, dust and pollen, Thompson and his colleagues hope to determine how global temperatures have varied over time. Such data are critical to the debate over whether industrial pollution is responsible for the global warming over the last century.

Thompson is driven by reports, from Siberia to the Andes, that this natural archive is disappearing at an alarming rate as temperatures rise at higher elevations.

Three years ago, Thompson was talking about a $6 million federally sponsored crash program to core a half-dozen of these threatened glaciers.

Last week however, as he packed his parka and solar-powered drill for yet another ice-field expedition, he was taking a slightly different tack.

Instead of working in relative obscurity, Thompson portrays this expedition—to the glacier atop Bolivia's 22,000-foot Mount Sajama—as something of a media event. The National Geographic Society, a sponsor, is planning a documentary, he said, and reporters are expected to fly in from Natural History magazine and ABC News.

Part of the attraction is the growing interest in such global ice core studies and their role in the global warming debate.

A bonus this year is Thompson's experimental use of a huge hot-air balloon to bring the cores down the mountain. It doesn't hurt the story that nobody has ever attempted a balloon launch at such heights before, or that the craft has been christened "The Soaring Penguin" with artwork to match.

Two federal science agencies are paying 90 percent of costs this summer, but Thompson is hoping that publicity will increase private support for subsequent expeditions to other mountains in Asia, Africa and the Americas.

"In the future, I'd like to obtain up to a third of the funding from private sources, but you need visibility to do that," he said.

This, to Thompson, seems a reasonable goal, since he works out of OSU's Byrd Polar Research Center, a place dedicated to that great American aviator, explorer and entrepreneur, Adm. Richard E. Byrd.

Until 1939, Byrd financed all his flights and polar expeditions by exciting the generosity of wealthy patrons.

President Franklin D. Roosevelt's decision to sponsor Antarctic research as a way to checkmate rival national claims to the southern continent ended this era of sometimes heroic, often foolhardy, spectaculars on ice.

Now, as government budget cuts increase the overall competition for public dollars, we're seeing scientists increasingly willing to orchestrate publicity so as to draw attention to their research.

Thompson is a serious researcher, but it will be no small challenge—at 22,000 feet in subzero temperatures—to extract these icy thermometers from a remote mountain glacier while at the same time satisfying the needs of dozens of scientists, balloon pilots, reporters and expedition sponsors.

Somewhere the admiral must be wishing him well.

David Lore *is science* reporter for The Dispatch. He is online at: *dlore@dispatch.com* ❑

Russia Plans Arctic Nuclear Plant

Parts from old sub engine to be docked on barge in 2002

***Washington Times*, 11 Sept 1997, p. A1, by Ben Barber (cb Peter Barretta)**—Russia will build the world's first floating nuclear power plant and anchor it in the Arctic Ocean just 500 miles from Alaska, officials said yesterday.

The decision has won the approval of international atomic energy experts but is likely to alarm environmentalists because of the fragility of the arctic and Russia's poor nuclear safety record.

Russia's Itar-Tass news agency said the 50-megawatt power plant will be adapted from the engine of one of Russia's old nuclear submarines, which are rusting at ports for want of spare parts, operating money and a post-Cold War mission.

A spokesman for Rosenergoatom, Russia's nuclear power agency, told reporters yesterday that the floating plant would be over 130 yards long and draw about 15 feet of water. It will be anchored at an offshore position near the village of Pevek on the northeastern Chukotka peninsula sometime after 2002.

A spokesman for the Russian Embassy in Washington noted that the region is inhabited by indigenous reindeer herdsmen related to the Inuit of Alaska. The urban population of the remote region is largely involved in mining, embassy spokesman Mikhail Shurgalin said.

The submarine power plant will provide electric power, heat and drinking water to 75,000 people, a Russian news report said.

"Obviously Greenpeace is against it," said Washington spokesman Andrew Davies. "Greenpeace is against nuclear power, period....We are against all nuclear power."

But the plan won support from Robert E. Ebel, director of the energy and national security program at the Center for Strategic and International Studies.

"I don't anticipate that a reactor on an offshore platform would be any more dangerous than a reactor on a nuclear submarine," said Mr. Ebel. "Or any more dangerous than that in a submarine resting at dock."

The plant will cost $300 million and replace a 40-year-old thermal power plant that consumed 100,000 tons of coal annually, reports said.

Russian media said yesterday that the plant has been approved by the International Atomic Energy Agency, and that construction will begin in 1999.

"Chukotka is in the middle of nowhere. The whole area is a fuel-deficient region. They are at the tail end of the distribution network, forever running out of fuel in winter. This posed massive hardship. They think 'Why can't nuclear power be an answer.':

Mr. Ebel said pulling nuclear reactors out of submarines would put them where they could be useful and where an eye could be kept on them.

Used fuel is to be stored on a barge, and every 13 years the plant would be towed to the port of Murmansk—about 2,500 miles away—for repairs and the reloading of fuel. ❑

Northern Climes

Washington Times, 18 May 1997, p. D8, FORT LAUDERDALE, Fla. (cb Peter Barretta)—Japanese researchers report additional evidence suggesting that northern climes may protect against certain eye diseases, while ultraviolet-rich tropical areas may promote the diseases.

At the annual meeting of the Association for Research in Vision and Ophthalmology in Fort Lauderdale, researchers say residents of high latitudes, such as Icelanders, have far lower levels of cataracts and another sun-related eye disease than people who live in southern Japan.

Dr. Hiroshi Sasaki of Kanazawa Medical University studied more than 1,000 Icelanders and 2,000 Japanese and found that the development of cataracts in Iceland occurs about 10 years later than in Japan. ❑

Even Veteran Seamen Dread Treacherous Drake Passage

***The Washington Times*, 10 Feb 1997, p. A10, by Roger Atwood, IN THE DRAKE PASSAGE, Antarctica (cb Peter Barretta)**—Waves crash over the bow, the sky is a furious gray, and the ship rolls and creaks with every ocean swell. For Capt. Karl Sanden of the *Polar Duke*, however, it is a blessedly quiet day in the Drake Passage.

"You never know what you're going to get here," he said, "shifting his weight from side to side to keep his balance as the ship heaved to port and starboard. "You can get caught in a storm, or you can get locked in ice. You can take a wrong turn and hit a seamount. You have currents from the west, currents from the east. The flow can go in any direction.

"In the winter it's dark all the time, and you've got to worry about icebergs. Sometimes the maps aren't so good either."

Mr. Sanden has skippered ships in the Arctic near his native Norway, in the North Sea and in plenty of other famously dangerous bodies of water. But none, he says, is quite as nasty as the Drake Passage, which separates Antarctica and South America at the only place where the world's two largest oceans meet in a chaos of currents, winds and storms that can test the nerves—or the sanity—of even the most experienced captain.

"The Drake is enough to make the living wish they were dead. It's enough to make an atheist believe in God," said Patricio Rojas, the *Polar Duke*'s cook, who says he has endured it more times than he cares to remember.

With more tour ships heading for Antarctica from Chile or Argentina, plus the usual flow of yachtsmen, the Drake Passage is getting busier. And the captains of those ships had better be prepared for what awaits them, veterans say.

"You're in a vortex here, because it's between two oceans. The water is not terribly deep; it's just the weather that makes it so dangerous," said Alan Hickey, a Massachusetts-born seaman and organizer of scientific programs on the Norwegian-flagged *Polar Duke*, which served the U.S. Antarctic Program.

The Drake Passage is so wild because it lies at the only latitude outside the Arctic with no major landmass. Wind swirls around the globe with nothing to stop it, squeezed between Antarctic and South America like pincers.

The circular currents act as a barrier between Antarctic and the rest of the world, and that's why its wildlife is unique.

Hurricane-force winds are common in the Drake Passage. Thirty-foot waves can smother a ship, and unless ships are near the Argentine or Chilean coasts, help could be days away.

"Once you leave the southern tip of South America, you're on your own," said Gary Osborne, a crewman from Oregon. ❑

Russia Plans to Close Main Antarctic Base

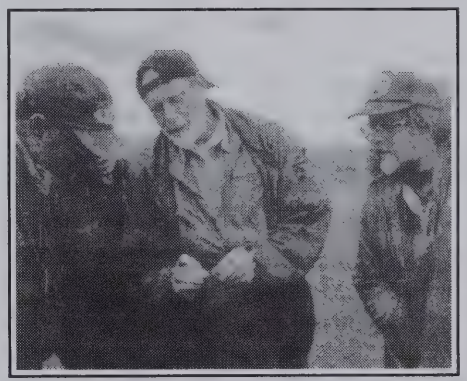
***The New York Times* (AP), 14 June 1997, MOSCOW (cb Peter Barretta)**—Russia said today that it plans to close its main Antarctic base to save money and will also cut personnel at other bases there.

The Molodyozhnaya station in eastern Antarctica will close in two or three years, said Vyacheslav Martyanov, deputy head of the Antarctic division of Russia's Arctic and Antarctic Research Institute.

The Progress station 800 miles away will become Russia's main base on the continent, Mr. Martyanov told the ITAR-Tass news agency. The Bellingshausen station will be left with a minimum work force, and the crew at the Myrny station, which has an observatory, will be halved. The Vostok station, near the magnetic pole, will be maintained as an international research base, Mr. Martyanov said.

In Soviet time, Russia had as many as nine Antarctica stations. But financial problems since the 1991 Soviet collapse have made continuing on that scale impossible. ❑

Prehistoric Lookout



CYNTHIA PERKINS

In two separate field trips, participants in the anniversary celebration of the Naval Arctic Research Laboratory in Barrow flew to the Mesa site, an archaeological site in the northern foothills of the Brooks Range, for a guided tour. Discovered in 1978 by Michael Kunz an archaeologist for the U.S. Bureau of Land Management, the Mesa is considered one of the oldest well-documented archaeological sites in North America. Kunz and his colleague Richard Reanier believe prehistoric hunters used the Mesa as a lookout during two intervals: the first, from 11,700 years ago to 11,200 years ago; and the second, from 10,200 years ago to 9,700 years ago. (See "50th Anniversary," p. 5) ❑

Penguins Able to Keep Their Cool

***Colorado Springs Gazette*, 14 July 1997, NEW YORK (AP) (cb Bob Streich)**—Penguins actively cool their bodies during long underwater dives to slow their metabolism and lengthen the amount of time they can spend underwater, a study has found.

While the most accomplished human divers can hang out at 300 feet for up to four minutes, king penguins can stay at similar depths for nearly twice that long.

In the July 3 issue of the journal Nature, biologists from France, Britain and Germany proposed that penguins intentionally lower their body temperature during long dives, which slows down metabolism and decreases oxygen demand. And that extends the time the birds can stay underwater.

The researchers studied 12 king penguins, placing tiny thermometers in their stomachs and abdomens and setting the birds free in their Antarctic home.

During some dives the birds' abdomens reached temperatures of 52 degrees Fahrenheit, far below the normal penguin body temperature of 100.4 degrees. ❑

The Pipeline at Age 20

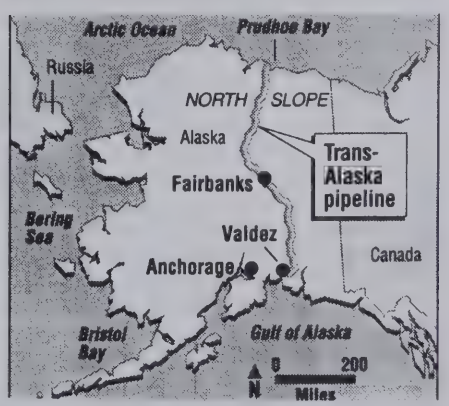
It cost $8 billion to build in the 1970s. The pipe is 48 inches in diameter.

Half of the pipeline was built underground. The part above ground is raised at least 5 feet so caribou can migrate underneath.

Oil travels through the pipeline at 5.5 miles her hour, so it takes six days for oil to travel the 800 miles from Prudhoe Bay to Valdez.

The pipeline passes through temperatures ranging from 85 degrees in the summer to 50 degrees below zero in the winter.

More than 20 percent of U.S. oil production moves through the pipeline. Most of that oil goes to the West Coast. ❑



Black gold: The pump station north of Fairbanks, Alaska, is the midway point of the 800-mile, Prudhoe-to-Valdez oil pipeline. Production has declined, but the venture has brought enormous wealth to the state.

Tiny Tribe Jolts Alaska

The New York Times, **9 May 1997, p. A1, by Carey Goldberg, VENETIE, Alaska (cb Peter Barretta)**—From this log-built bogland village of barely 200 Athabaskan Indians north of the Arctic Circle, a snowball began to roll.

It started small, here on the Chandalar River. In 1987, the tribal leaders of the Native Village of Venetie (pronounced VEEN-ih-tye) asserted their right to tax a contractor who was building a school here. The state fought it. It argues that under the laws governing Alaskan natives, the village's tribal government had authority over its own people, but not the power to tax or regulate their land.

Then it got bigger. The case advanced to the United States Court of Appeals for the Ninth Circuit, in San Francisco, which ruled last fall that the natives had the right to tax businesses on their land, about the size of Delaware, because it qualified as "Indian Country," much like the reservations in the lower 48 states.

Now, the challenge that Venetie set into motion has such mammoth implications that the State of Alaska has apportioned $1 million for an appeal to the United States Supreme Court. At stake, alarmed state officials say, is the ability to tax and regulate not only Venetie's territory but also a total of 44 million acres of native-owned land-or more than a tenth of Alaska. The total area almost rivals the 56 million acres occupied by Indian reservations in the rest of the country.

"We've used the word chaos to describe it," said Bruce Botelho, the Attorney General of Alaska. " This impacts primarily rural Alaska, but you're talking in excess of 200 communities who may have a claim that they're occupying Indian Country."

They include whether state taxes and motor vehicle rules still apply on native lands, whether state hunting, fishing and environmental rules must still be obeyed there and whether thousands of non-natives living there are now subject to tribal laws.

A particularly daunting prospect —one that lawyers for the natives say is highly unlikely—is that tribal governments could try to tax oil and gas drilling on their lands as well, state officials say.

"In practically every area of government," the petition asserts, "Alaskans—native and non-native alike—must now ask themselves the basic question: who is in charge?"

The people of Venetie, many of them increasingly disillusioned with the state government, have no doubt what the answer should be. They say they are simply asserting their control over land they have inhabited since thousands of years before the Supreme Court existed, the land at the core of their tribe's identity.

"Our forefathers claimed this country and said, 'This is our hunting grounds,'" said Larry Williams, a Venetie laborer. "Everybody knows it's true."

"Whether we lose or not," said Eddie Frank, a talented trapper and toboggan maker and member of the village, "the state will be fighting everyone else now because the Circuit Court decision opened the door for that. Even a small tribe like us of 300 people really rocked the boat for the state, and it scares the heck out of them. It's going to be a long battle." ❑

Rare White Penguin

New York Times, **15 April 1997, p. C4, by James Gorman (cb Peter Barretta)**—There are songs and tales of the white buffalo. Rudyard Kipling wrote a story about Kotick, the white seal. And then there is that whale that kept Captain Ahab so busy. But the recent sighting in Antarctica of a white Emperor penguin seems to be a first.

Dr. Gerald Kooyman of the Scripps Institution of Oceanography, who has been studying penguins for 30 years, saw the chick at the end of his most recent field season, last December.

He was scanning the penguin colony at Terra Nova Bay with binoculars when he realized that what he was looking at "was a bird, and not just a lump of snow." Emperor penguins normally have a white belly with a dark back and head and hints of yellowish orange at the throat and on the bill. Dr. Kooyman said white Adelie penguins had been sighted and pure black King penguins, but he knew of no white Emperor.

The bird, which was white "right down to the toenails and the bills," but not an albino since its eyes were brown, was simply a genetic accident, Dr. Kooyman said. He added that the survival rate for Emperor penguin chicks was low and that a white bird, which would stand out in the water to the leopard seals and perhaps fur seals that prey on Emperor penguins, would probably be in more danger. In his study of penguins, Dr. Kooyman sometimes attaches small tracking devices to the birds, and he said that he and his colleagues were always careful not to use anything that would act as a flasher underwater, catching the eye of predators. "I'm afraid," he said, "that the white color may be the ultimate flasher." ❑

Sunrise

Associated Press, 19 Aug 1997, MCMURDO STATION, Antarctica (cb Billy-Ace Baker)—The sun rose today over McMurdo Station and its 154 Americans - for the first time in 160 days.

Its return helps break the winter isolation at the U.S. base, where staffers were preparing for the arrival of the first flights from the outside world since winter set in.

On Thursday, the Air Force will deliver 60 staff members, fresh food, three tons of mail and newspapers.

Though spring at the bottom of the world is still a month away, researchers got an early start on celebrating with a swim on Saturday in the freezing waters off New Zealand's nearby Scott Base.

"Many of our number jumped naked into 28 degree water and came out refreshed," said American Russell Bixby.

The only bar at McMurdo open in winter was packed that night, with revelers enjoying free drinks, loud music and dancing to celebrate the end of winter. ❑

South Pole Gets Colder

by Malcolm W. Browne

New York Times, **26 Aug 1997, p. C4**—The South Pole has been experiencing the coldest weather since record keeping began 40 years ago.

The National Science Foundation, which administers research at Amundsen-Scott South Pole Station, said the average South Pole temperature during July was minus 86.8 degrees Fahrenheit, breaking the previous record of minus 83.7 degrees set in July 1965. The coldest daily temperature recorded in the month, on July 29, was minus 108.2.

July is the Southern Hemisphere's coldest month. But cold as it is, the South Pole Station has never reached the bitter extremes recorded at Russia's Vostok Station on Antarctica's polar plateau. The Guinness Book of World Records says the world's coldest temperature was recorded at Vostok Station on July 21,1983: minus 128.6 degrees Fahrenheit.

During the current winter season, 28 men and women are living at the South Pole.

The pole residents, scientists and technicians, often observe an annual ceremony entitling them to membership in the "300 Club." On the first day the outside temperature drops to minus 100 degrees, initiates briefly roast themselves at 200 degrees Fahrenheit in their station sauna before rushing naked outside their headquarters building, thereby experiencing a drop in temperature of 300 degrees. ❑

9 October 1997—With one mighty swing, Ruth Siple christened the RV Launcher *McKinley Gould*. The new multidisciplinary research vessel, designed for year-round polar operations, has been constructed to accommodate 26 scientists.

Ruth was the wife of Paul Siple, the polar explorer who accompanied "Larry" Gould and Admiral Byrd on numerous expeditions as well as leading several of his own to the polar regions. Today, Ruth serves as the Honorary President of *The Antarctican Society* of the United States and, together with Paul Dalrymple, publishes the Society's newsletter.

Antarctic Solo Trek By 60-Year-Old Woman

1 Nov. 1997, by Brian Shoemaker, SNOHOMISH, Wash.—Bill Thayer has a wife who likes to spend her birthaays in some pretty remote places. Helen Thayer turned 50 treking with her dog to the North Magnetic Pole. For her 60th, she has started a 1,500-mile solo trek across Antarctica hauling a 260-pound sled.

On her birthday, Nov. 12, Thayer expects to be battling subzero temperatures, dodging crevasses and struggling with 100-knot wind gusts. She plans to walk at least 12 hours a day, with about five minutes of rest every hour or so. Anything longer will make her body temperature drop too much. Anything too strenuous will make her perspire too much.

Bill Thayer, who was left behind in Snohomish, said that "Helen put in a daily hour pulling a sled loaded with concrete, to toughen her for the polar sled which is crammed with nothing but the essentials.

"She'll take in about 5,000 calories a day and expend about 6,000. About half of her food is carefully weighed out and without wrappers to reduce waste and weight. Only her journal will keep her company—she has no music and no books," Thayer said.

"Yesterday, Adventure Network International flew her to Hercules Inlet (80° W., 80° S), where she began her trek," said Thayer. "For the next three months, her only human contact will be with me via the daily satellite signals through a global positioning system hand-held transmitter. ❑

L.J. PETERS, SNOHOMISH, WA

BOOK REVIEWS

Project Coldfeet: Secret Mission to a Soviet Ice Station

Review by Peter Barretta

Authors: William M. Leary and Leonard A. LeSchack, Naval Institute Press, 196 pp; ISBN 1-55750-514-4

In May 1962, the Office of Naval Research (ONR) and the Central Intelligence Agency (CIA) launched one of the most exotic and successful spy missions of the Cold War: the parachuting of two intelligence officers onto a hastily abandoned Soviet drift station to collect data and their retrieval using an experimental aerial recovery technique.

Intelligence historian William Leary has teamed up with Leonard LeSchack, a Navy oceanographer and intelligence officer, who with Air Force Major James F. Smith, an intelligence officer and Russian linguist who both participated in Project Coldfeet, to write a most unusual story.

Lt. LeSchack had indicated that he would volunteer to investigate the abandoned Soviet ice island (NP-8). However, a senior scientist realized the need for also a more experienced officer who was both a qualified parachutist and familiar with the Arctic would be essential for such a project. Major Smith, who had been commander of several drifting stations, seemed ideal for such an assignment, and he quickly agreed to join LeSchack on the mission.

The plan of LeSchack and Smith was to parachute onto NP-8 and remain on the ice island for three days, sifting through data that the Soviets had left behind. At the end of this time, a World War II B-17, secretly owned by the CIA and equipped with the newly designed Fulton Skyhook Aeroretriever System would appear overhead and pluck them from the ice. The execution of the plan would prove a dangerous challenge.

They spent five days collecting documents, charts, electronic and electrical technical manual, pages of technical descriptions and operating instructions for electronic equipment, magnetic tapes, oceanographic/bathymetric/meteorological data, journals, logs, journals for recording deep water observations, aviation celestial navigation logbook and hardware such as radiosound, anemometers and geophones.

When they were done, both LeSchack and Smith were recovered safely and brought back a priceless trove of equipment and information regarding Soviet advances in polar science. Although LeSchack and Smith and their project comrades were celebrated and decorated, this courageous exploit remained classified for three decades, until Professor Leary came along to reveal it. ❑

A History of Antarctica

Review by Brian Shoemaker

Author: Stephen Martin; State Library of New South Wales Press, Macquarie St., Sydney, NSW, Australia; 272 pp; ISBN 0 7310 6601 4; A$65.00 plus postage.

The best comprehensive look at the entire history of Antarctica yet. A book about the people of Antarctica: those who have lifted the veil from Terra Australis Nondum Cognita. It traces the patterns of human activity in the South Polar region from Ui-te-rangiora in AD 650 through to the modern age of scientists and tourists.

Here you will find delight and despair through the words of the original explorers and scientists who ventured into the region when it was truly the last frontier, up to more recent political and environmental controversies.

The book is well laid out with superb color plates and historic black and white color photographs, many previously unpublished. It is a good read as well as a reference source. ❑

Special Offer to APS members at A$50.00 plus postage for a signed copy by the author. Order directly from State Library of New South Wales Press.

An Alien in Antarctica

Review by Brian Shoemaker

Author: Charles Swithinbank; McDonald and Woodward, Blacksburg, VA; 215 pp; ISBN 0–939923-43-2; $49.95

This book is a first-person narrative of a British scientist's experience working with the United States Antarctic Research Program over the span of 40 years. He obviously kept very detailed journals since names, places and events are very well documented, and he shines as more than an amateur cameraman; photographs in the book are outstanding.

Dr. Charles Swithinbank played a significant role in six U.S. expeditions to Antarctica under the auspices of the National Science Foundation since the International Geophysical Year. From that experience this book is a contribution to the Americana of the South Polar Region. He writes with great humor in this book about life in Antarctica.

Charles humorously refers to himself as an "alien," as a friendly dig at Americans who officially classify all foreigners working with U.S. programs as aliens. In a larger sense, however, he has been able to capture the feeling that all visitors to the Antarctic are in reality aliens. Well done! ❑

OBITUARIES

Bruno Zehnder, Photographer, 52, Is Dead

by Malcolm. W. Browne

***New York Times*, 23 July 1997, p. D21, (cb Malcolm Browne)**—Bruno Zehnder, an adventurous Swiss photographer best known for 'his striking images of penguins and other wildlife, died when he lost his way in a blizzard while trying to return to the Russian base at Mirnyy, Antarctica. He was 52 and lived in Manhattan.

Mr. Zehnder was spending the Southern Hemisphere winter at Mirnyy Station on the Antarctic coast south of the Indian Ocean. His goal was to study and photograph the breeding activities of emperor penguins, the only Antarctic creatures that breed on open sea ice in the continuous darkness and at winter temperatures of minus 70 degrees Fahrenheit.

Mr. Zehnder's brother Guido, also a New York City resident, said yesterday that information reaching him from the Russian Antarctic support base in Cape Town had been spotty. Even the date on which his brother died was uncertain, he said, although it apparently happened on July 7.

"According to broken communications the Russians received at Cape Town from their people at Mirnyy Station," Mr. Zehnder said, "my brother left Mirnyy alone on foot at about 11:45 in the morning. At 1 P.M. he radioed that the weather had deteriorated, with high winds. At 3:40 P.M. Bruno radioed that he was coming back, and then no more was heard, so the Russians put out flares to guide him. But he never arrived.

"My brother's body was found 42 hours later, one mile on the other side of the base. He had missed it by only 50 yards as he walked by it in the darkness and blowing snow. He must have felt panic and despair when he realized he had missed the base and was freezing to death."

Bruno Zehnder was a freelance photographer whose pictures appeared in many magazines in Europe and the United States. His frequent sojourns in Antarctica resulted in photographs that won several prizes; one of his most widely published pictures was of a pair of emperor penguins in tender embrace with a chick between them. Another picture, made during a trip last year, was of a mother emperor penguin trying vainly to feed her chick, whose beak had frozen closed.

Among Mr. Zehnder's awards were the United Nations Environmental Protection Prize in 1987 and the British Broadcasting System's Wildlife Photographer of the Year award in 1990. He was elected a fellow of the Royal Geographical Society in London.

In 1984 Mr. Zehnder persuaded his fiancée, Heather May of New York City, to accompany him on a trip to Marambio, one of Argentina's Antarctic stations. When they arrived at the base, he startled her by changing into a tuxedo and in forming her that the Argentine authorities were prepared to marry the couple on the spot. After the ceremony, they posed with wedding guests, who included some penguins.

Mr. Zehnder was born on Sept. 8, 1945, in Bad Ragaz, a Swiss mountain village near the border of Liechtenstein. Since 1977 he had lived in New York City when he was not traveling. Under the terms of his will, his brother said, he will be buried in Antarctica by his Russian companions, who have buried 45 of their own compatriots in the ice over the years.

CLYDE G. ARMITSTEAD

by Brian Shoemaker

Alaska aviation pioneer Clyde G. Armitstead, 94, died Feb. 11, 1997, in Eagle River, Alaska.

Mr. Armitstead was born June 19, 1902, in Frances, Okla. When he was 7, he moved with his family by covered wagon to homestead in New Mexico.

He started his flying career with the Marine Corps in 1923 in the First Aviation Group, Squadron 1. After Marine Corps duty, he operated a licensed airmotive shop in the Territory of Alaska during the '30s and early '40s in Fairbanks.

During this period, he volunteered for a mission to rescue researchers from a Russian scientific ship that was trapped in the ice. He was awarded the Order of Lenin, the highest medal of honor in Russia, for his efforts in the rescue. His family asks that donations be made in his memory to the Alaska Aviation Heritage Museum, 4721 Aircraft Drive, Anchorage 99502.

ROBERT NICHOLS

***San Francisco Chronicle*, 3 October 1996**—Robert E. Nichols, retired director of public relations for the Bank of America and a veteran journalist, died of cancer, Monday in San Francisco at the age of 71.

His long journalistic career included positions at the *San Diego Union*, CBS, the *New York Herald-Tribune*'s Washington bureau and *Time* and *Life* magazines.

Among the major stories he covered was Admiral Richard E. Byrd's Antarctic expedition in 1946. He was a member of the American Polar Society for 50 years.

From 1961-68 he was financial editor of the Los Angeles Times.

He won the Loeb newspaper special achievement award and the Loeb award for distinguished financial reporting, given by the University of Connecticut. He was national president of the Society of American Business Editors and Writers.

After leaving the *Los Angeles Times*, Mr. Nichols became a special assistant to the board of governors of the Federal Reserve System.

In 1970, he joined the Bank of America at its San Francisco headquarters as director of editorial services, and three years later was named director of public relations.

He retired in 1985.

He is survived by his wife, Diana; a son, Craig; two daughters, Robin Nichols and Kim Jeffries; and two grandchildren.

Donations may be made to the Visiting Nurses and Hospice of San Francisco, 3360 Geary Blvd., 94118. ❑

Letters to the Editor

To the Editor:

The *Polar Times* is always looked forward to, and I return to it quite often. I became fascinated with the polar worlds when I became an avid skier. Keep the *Polar Times* coming!

Tony Ragonetti
Staatsburg, N.Y.

To the Editor:

Congrats on your continuing high standards for the *Polar Times* compilation, editing, production and dissemination. Having recently completed a seven-year stint of doing the same kind of job for the newsletter/journal of the Washington Map Society (*The Portolan*), I know how much work is involved along with the continuing commitment of time, energy, and resources.

Charles Burroughs

To the Editor:

I enjoy the *Polar Times* very much and wanted to let you know that I am available as a book reviewer, should you be in need of someone in forthcoming issues.

Keep up the good work.

T.H. Baughman, Ph.D.
Chairperson, History Department
Benedictine College
Atchison, Kansas

To the Editor:

I was, of course, delighted to receive your letter of 23 July. It is indeed an honor to be elected an honorary member of the American Polar Society and to join such a distinguished group.

Graham Rowley
Ottawa, Canada

To the Editor:

Cover, to cover, I learn of things most never even hear about or think about. Thanks.

John W. Kessing
Lewisville, Texas

To the Editor:

I saw the enclosed article in our local paper and thought of your wonderful *Polar Times*. Maybe you'll want to include this.

Nora Wolfe
San Jose, Calif.

***Editor replies:** Thank you very much for "clipping and mailing" a story for the* Polar Times. *It's the foundation of the magazine.*

To the Editor:

I have read the *Polar Times* from cover to cover. It is excellent. You are to be congratulated. I just wish Gordon were here to read it.

Do you have any idea what I can do with Gordon's books—both Arctic and Antarctic? He collected quite a few.

Marjorie Fountain

***Editor replies:** I recommend donating the books to the American Polar Society wing of the Byrd Polar Research Center at Ohio State University.*

To the Editor:

I am enjoying the *Polar Times* again as one of few Japanese who has a complete set of back issues. It's nice to see the name of Mrs. Howard in the latest issue; I never met Mr. Howard but just talked on the phone when I passed New York. Surely August would be very proud of you.

Kou Kusunoki
Tokyo

CONTINUED AT RIGHT

CONTINUED FROM LEFT

***To Mrs. William Benedict cc the* Polar Times**

I am writing in response to your son's request with regard to your late husband, Lt. Col. William P. Benedict and his command of the first flight to land at the North Pole.

Your understanding that General Old asked Bill to "take what he needed and get there before the Navy" is consistent with what I know. General Old wanted the favorable publicity that such a first would give the Air Force and the Alaskan Air Command. As the copilot on this flight, I can state with authority that Bill was in command of the flight.

I hope this finds you in good health and removes any misunderstanding that may have arisen in the intervening years.

Colonel Joseph O. Fletcher
USAF (Ret.)

Editor replies: *Correction to Vol. 2, No. 8, Back Cover—Please note that LCol. William P. Benedict was in command of the first flight to the North Pole.*

***To LCol. William E. Molett, USAF (Ret)., cc the* Polar Times**

I just finished reading your excellent book on Peary's methodology on his trip to the pole. I'm glad that at long last a qualified navigator has answered the various, spurious arguments that have tried through the years to diminish Peary's great achievement.

Robert S. Marimon
Rancho Palos Verdes, Calif.

To the Editor:

With kindest regards and congratulations on all your activities on behalf of the Society. I am sure that August Howard would be most pleased and will be putting in a good word for you.

A.L. Washburn
Bellevue, Wash.

Oral History Update

Oral history volunteers have started to materialize, and we are making some progress with interviews.

Mort Beebe, former Public Affairs Director for "Operation Deep Freeze," and Fauno Cordes, who worked in the oral history program of the Society of Women Geographers, have teamed up to do interviews of Old Polar Explorers in the San Francisco area.

Leverett Byrd, Admiral Byrd's grandson, is working the problem in the Boston area and has interviewed a number of explorers from the 1930s who sailed with Admiral Byrd. Jeff Rubin is preparing to do oral interviews in New York, starting with Dick Chappell, our new president.

Again, I invite our membership to help in this project. It is an opportunity to meet with the men and women who have been leaders in the field of polar exploration and scientific research and to preserve their experiences for posterity.

Please contact me by telephone, telefax email or personally and make a date to preserve history. ❑

ANNOUNCEMENTS

Honorary Members Selected by Society Board

We are happy to announce that the Board of Governors has selected eighteen new Honorary Members of the American Polar Society. No new members have been selected to Honorary rank since the 1979 selection of Admiral Richard Black; however, the board decided that since the pace of polar exploration and scientific research had greatly increased since world War II, there were more individuals eminently qualified for selection. Accordingly, a new honoree will be selected on an annual basis, retroactive to 1980. Our current Honorary members are as follows:

General David L. Brainard, 1936-1946
Admiral Richard E. Byrd, 1936-1957
Dr. Vilhjalmur Stefansson, 1940-1962
Dr. Lincoln Ellsworth, 1944-1951
Prof. Frank Debenham, 1949-1965
Dr. Paul A. Siple, 1957-1968
Louise A. Boyd, 1959-1972
Capt. Finn Ronne, 1960-1980
Col. Bernt Balchen, 1966-1973
Dr. Laurence M. Gould, 1969-1995
Dr. Thomas C. Poulter, 1973-1978
Admiral Richard B. Black, 1979-1992
Col. Norman D. Vaughan, 1980-
Dr. A. Lincoln Washburn, 1981-
Charles F. Passell, 1982-
Thomas H. Manning, 1983-
LCDR Conrad "Gus" Shinn, 1984-
Graham W. Rowley, 1985-
Dr. Waldo K. Lyon, 1986-
Capt. William R. Anderson, 1987-
Col. Joseph O. Fletcher, 1988-
Dr. Norbert Untersteiner, 1989-
Dr. Max C. Brewer, 1990-
VADM James F. Calvert, 1991-
Dr. Martin A. Pomerantz, 1992-
RADM James R. Reedy, 1993-
Beaumont "Beau" Buck, 1994-
Dr. David C. Nutt, 1995-
Dr. Charles R. Bentley, 1996-
Dr. Wilford F. Weeks, 1997-

Honorees will be presented awards during the American Polar Society Convention in October 1998 at the Byrd Polar Research Center, Columbus, Ohio (see announcement in this space for details).

Nominations for Honorary Membership for 1998 are open through April 1998. The APS Board of Governors will make their selection prior to the Society Convention. Nominations should be addressed to the APS Board of Governors, Box 87, Lakeside, OR 97449, with a single-page typewritten biography, mailed to arrive no later than April 30, 1998.❑

DEEP FREEZE ASSOCIATION REUNION
7-10 May 1998

LOCATION—Denver Tech Center, 4900 S. Syracuse St, Denver, Colorado

CONTACT—Dick Bowers • 10740 Pimlico Cir • Indianapolis, IN 46280-1165
Ph: 317-848-6917 • Email: dbowers@netdirect.net

DISESTABLISHMENT OF "DEEP FREEZE"

"Operation Deep Freeze" will be formally disestablished on March 12, 1998, in a ceremony at the Naval Construction Battalion Center, ending an active Navy presence in the South Polar Region, a presence which began with Admiral Richard Byrd in 1928.

CONTACT—Jacqueline Kiel, 805-982-5934; Email: nsfa15b.nsf@asa.org

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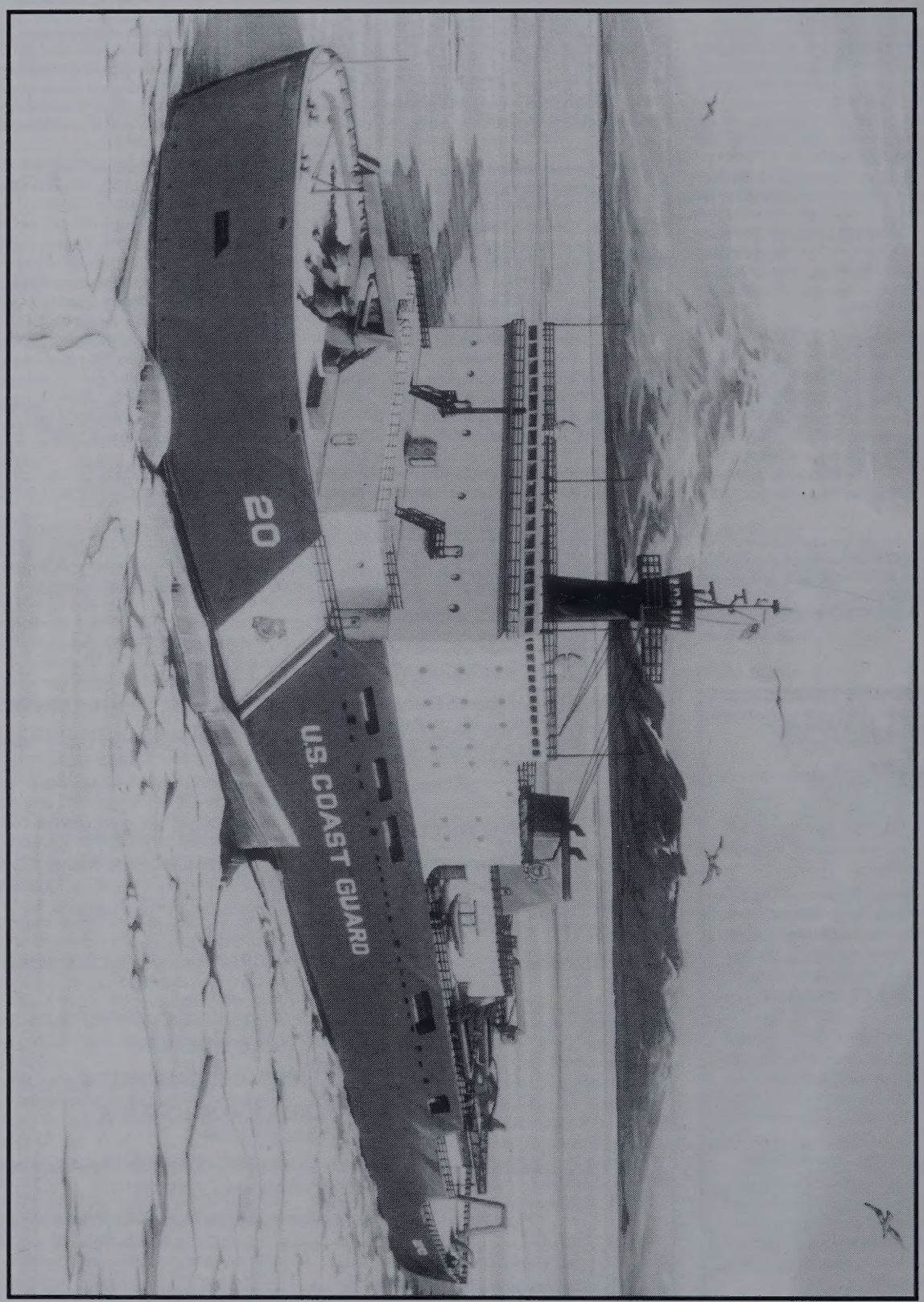
AMERICAN POLAR SOCIETY
1ST ANNUAL CONVENTION/SYMPOSIUM/
HONORARY AWARDS PRESENTATION
8-10 October 1998

LOCATION—Byrd Polar Research Center • The Ohio State University
1090 Carmack Road • Columbus, OH 43210

A flyer will be mailed in April 1998 with further details.

If you are planning a reunion, let us know as soon as possible so we can publish the details in a timely fashion. Better still, we will publish "inquiries of interest" in reunions, for members of polar expeditions. Then, after the celebration, we will carry an article with the details of the get-together.



USCGC Healy (WAGB 20), named for "Hell Roaring Mike" Healy, former captain of the Revenue Cutter *Bear*.